POWER BI

FOR THE BUSY PROFESSIONAL

By Michael Olafusi

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Book written and formatted by mike@urbizedge.com

Preface

I started my data analysis career with Comviva – Airtel Africa creating daily, weekly, monthly and ad-hoc reports for the entire operations in the CRBT (caller ring back tunes) product unit across Africa. The company operated across ten countries in Africa then and I was creating between 11 and 30 reports daily. The company had just moved to Africa after Bharti Airtel acquired Zain Africa operations, so everything started from scratch – my colleagues and I had to no inherited report templates.

Power BI is the tool I wish we had then. I would have been able to automate all our reports with ability to drill down and drill through, allowed each country operations manager see only what was within his region/country while the big bosses overseeing the entire continent can see everything. I would not have needed to work on public holidays that were local to us while the other countries teams needed their reports and were not on holidays.

Most importantly, I would have been able to build more insightful reports and ones focused on providing business intelligence; I would have had more time to do more strategic revenue improving activities rather than slaving away at recurrent reports making. And the management would always have all the data and reports they needed in a very interactive and real-time way.

This book is to give you what I lacked then; it is my own way of making it easy for you to learn and immediately start using Power BI without having to take a leave off work or risk migraines. I have used very easy to follow illustrations with a hands-on approach to ensure that it would be fun and easy for you. You are already a busy professional, this book is to fit perfectly into your life and not disrupt it.

And about me? I used to be a Microsoft Most Valuable Professional (awarded five times). I am a Microsoft Certified Trainer (MCT) and have an MCSA: BI reporting certification. Helping people and companies make the most of their data is what I do full-time. I have also written books and created online courses that have been used by over 20,000 people across the world. You can connect with me on LinkedIn: https://www.linkedin.com/in/olafusimichael/

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Comprehensive Introduction To Power BI And The Value Proposition

Power BI is Microsoft's self-service Business Intelligence solution and is the most popular self-service BI solution in Nigeria. Many companies in Nigeria are beginning to realise the huge importance of having flexible and robust BI reports and a lot of them are turning to Power BI due to the local presence of Microsoft and the low entry fee of Power BI compared to the other self-service BI solutions.

As a business professional, what do you need to know about Power BI and its potential value to your organization? Well, that is what we are going to discuss in the next few paragraphs.

Before the advent of self-service BI solutions, companies used to have a data warehouse or IT team who manage the company-wide data using Microsoft SQL servers, Oracle database servers or MySQL database servers (there are others but these are the most popular ones). These tech-savvy team model the company data and provide portals for the other teams/departments in the company to download data they need for their reports. Sometimes, they create reports too for the business managers to consume but these reports are often static and not robust enough for day-to-day business needs. Hence, the need for a second group of people -- analysts. They could be sales analysts, operations analysts, customer service analysts, marketing analysts or data analysts. This set of people create the highly important day-to-day reports that management use to keep the business running smoothly and for strategic planning. These reports are mostly made with Microsoft Excel because of its ease of use and managers' preference for it. And again, before now, this was good enough.

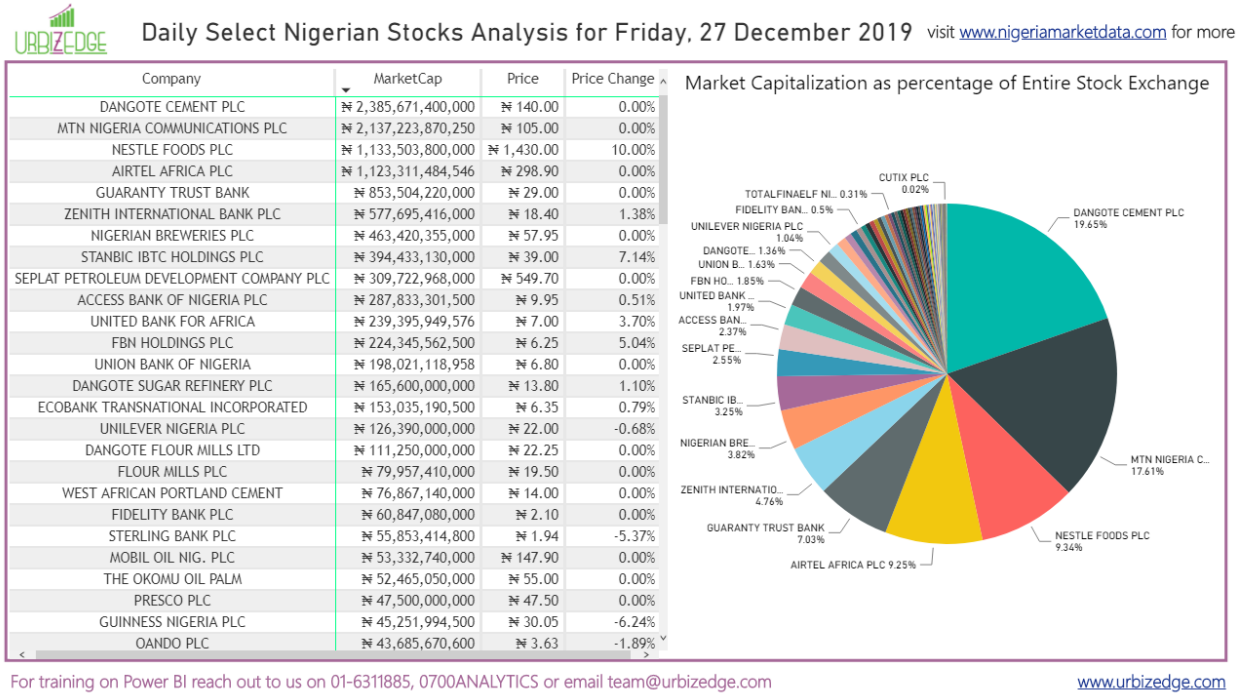
However, since the advent of self-service BI, Excel is now obviously no longer good enough for reporting all the business operations. Excel is still extremely important and useful but not great at providing real-time robust dashboards/reports that can be consumed on the go by managers (without having to lug around a laptop and Excel). Managers are increasingly looking for reporting tools that provide them real-time access to their business data reports and accessible from their iPads, tablets and smartphones even in the middle of the night or while on a vacation in a remote island/village. And that is the very thing, with many other valuable features, that self-service BI solutions like Power BI provide.

With Excel, you have to create the reports repeatedly and email them out. I used to work as a business analyst and MIS analyst for Comviva on an Airtel Africa CRBT project. I often say I worked for Airtel Africa as Comviva was a sister company to Airtel, both were owned by the Bharti Group. I used to create at least 11 daily reports -- one for each of the 10 countries we were operating in in Africa and one pan-Africa report to the Airtel HQ in Kenya. Then every Friday, I create a weekly report and presentation. Been very good in Excel, I created a template to automate the reports and reduce my daily repetitive tasks. Yet two things could not be automated away

and gave the management concern -- they only get the reports when I email them out and they always have to view it on their laptops. How were these a problem? On Saturday and Sunday, they are blind. They don't see what has happened all throughout the weekend till I send out reports on Monday. Then, whenever they are in a meeting or on a flight, they have to wait till they can open their PC, download the reports and interact with it before they can fully know what's in it.

Now, with Power BI, those problems are no more. I can design the reports once and set it to update automatically each day, so I don't have to daily recreate the reports. Then the managers can view the reports any day, especially on Saturday and Sunday, and see the updated (real-time) analysis. Lastly, they don't have to be on their PC. They can access the reports on their smartphones, tablets and any internet connected device that has a good browser.

And those aren't just the only benefits. You get drill-down capabilities, enhanced visualizations, KPI trigger alerts and many more benefits that managers won't want to turn a blind eye to. Below is the extract of the slides I use to present the benefits of Power BI to managers. You can also view two of my openly available Power BI dashboards that I often use to show the power of Power BI: http://vip.urbizedge.com/economy and http://vip.urbizedge.com/stocks


URBIZEDGE
Daily Select Nigerian Stocks Analysis for Friday, 27 December 2019
visit www.nigeriamarketdata.com for more
Company | MarketCap | Price | Price Change
DANGOTE CEMENT PLC | ₦ 2,385,671,400,000 | ₦ 140.00 | 0.00%
MTN NIGERIA COMMUNICATIONS PLC | ₦ 2,137,223,870,250 | ₦ 105.00 | 0.00%
NESTLE FOODS PLC | ₦ 1,133,503,800,000 | ₦ 1,430.00 | 10.00%
AIRTEL AFRICA PLC | ₦ 1,123,311,484,546 | ₦ 298.90 | 0.00%
GUARANTY TRUST BANK | ₦ 853,504,220,000 | ₦ 29.00 | 0.00%
ZENITH INTERNATIONAL BANK PLC | ₦ 577,695,416,000 | ₦ 18.40 | 1.38%
NIGERIAN BREWERIES PLC | ₦ 463,420,355,000 | ₦ 57.95 | 0.00%
STANBIC IBTC HOLDINGS PLC | ₦ 394,433,130,000 | ₦ 39.00 | 7.14%
SEPLAT PETROLEUM DEVELOPMENT COMPANY PLC | ₦ 309,722,968,000 | ₦ 549.70 | 0.00%
ACCESS BANK OF NIGERIA PLC | ₦ 287,833,301,500 | ₦ 9.95 | 0.51%
UNITED BANK FOR AFRICA | ₦ 239,395,949,576 | ₦ 7.00 | 3.70%
FBN HOLDINGS PLC | ₦ 224,345,562,500 | ₦ 6.25 | 5.04%
UNION BANK OF NIGERIA | ₦ 198,021,118,958 | ₦ 6.80 | 0.00%
DANGOTE SUGAR REFINERY PLC | ₦ 165,600,000,000 | ₦ 13.80 | 1.10%
ECOBANK TRANSNATIONAL INCORPORATED | ₦ 153,035,190,500 | ₦ 6.35 | 0.79%
UNILEVER NIGERIA PLC | ₦ 126,390,000,000 | ₦ 22.00 | -0.68%
DANGOTE FLOUR MILLS LTD | ₦ 111,250,000,000 | ₦ 22.25 | 0.00%
FLOUR MILLS PLC | ₦ 79,957,410,000 | ₦ 19.50 | 0.00%
WEST AFRICAN PORTLAND CEMENT | ₦ 76,867,140,000 | ₦ 14.00 | 0.00%
FIDELITY BANK PLC | ₦ 60,847,080,000 | ₦ 2.10 | 0.00%
STERLING BANK PLC | ₦ 55,853,414,800 | ₦ 1.94 | -5.37%
MOBIL OIL NIG. PLC | ₦ 53,332,740,000 | ₦ 147.90 | 0.00%
THE OKOMU OIL PALM | ₦ 52,465,050,000 | ₦ 55.00 | 0.00%
PRESCO PLC | ₦ 47,500,000,000 | ₦ 47.50 | 0.00%
GUINNESS NIGERIA PLC | ₦ 45,251,994,500 | ₦ 30.05 | -6.24%
OANDO PLC | ₦ 43,685,670,600 | ₦ 3.63 | -1.89%
Market Capitalization as percentage of Entire Stock Exchange
CUTIX PLC 0.02%
TOTALFINAELF NI... 0.31%
FIDELITY BAN... 0.5%
UNILEVER NIGERIA PLC 1.04%
DANGOTE... 1.36%
UNION B... 1.63%
FBN HO... 1.85%
UNITED BANK ... 1.97%
ACCESS BAN... 2.37%
SEPLAT PE... 2.55%
STANBIC IB... 3.25%
NIGERIAN BRE... 3.82%
ZENITH INTERNATIO... 4.76%
GUARANTY TRUST BANK 7.03%
AIRTEL AFRICA PLC 9.25%
NESTLE FOODS PLC 9.34%
MTN NIGERIA C... 17.61%
DANGOTE CEMENT PLC 19.65%
For training on Power BI reach out to us on 01-6311885, 0700ANALYTICS or email team@urbizedge.com
www.urbizedge.com

Enjoy!

Note: The quote and architecture slides are from Brandon George's presentation (https://www.crmug.com/HigherLogic/System/DownloadDocumentFile.ashx?DocumentFileKey=5011d1ea-f570-6560-6a95-6a8799f3e895&forceDialog=1).

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Power BI for Managers

The Value Proposition

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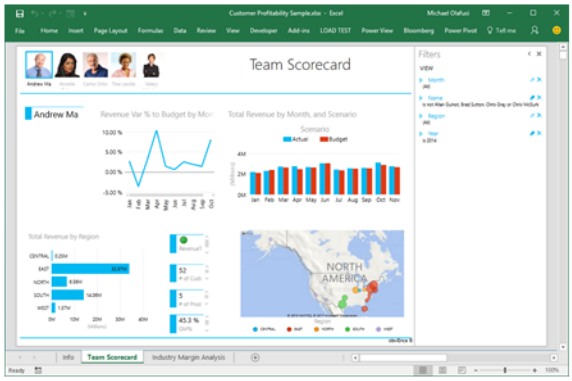
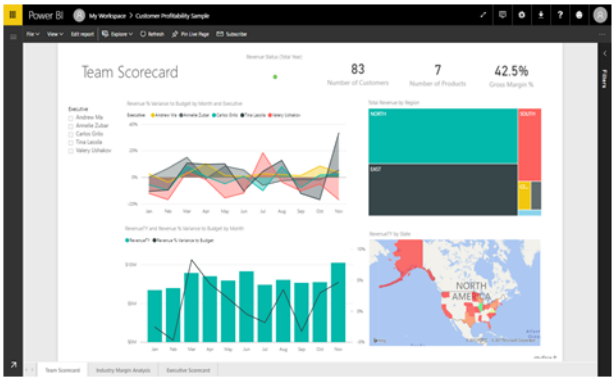
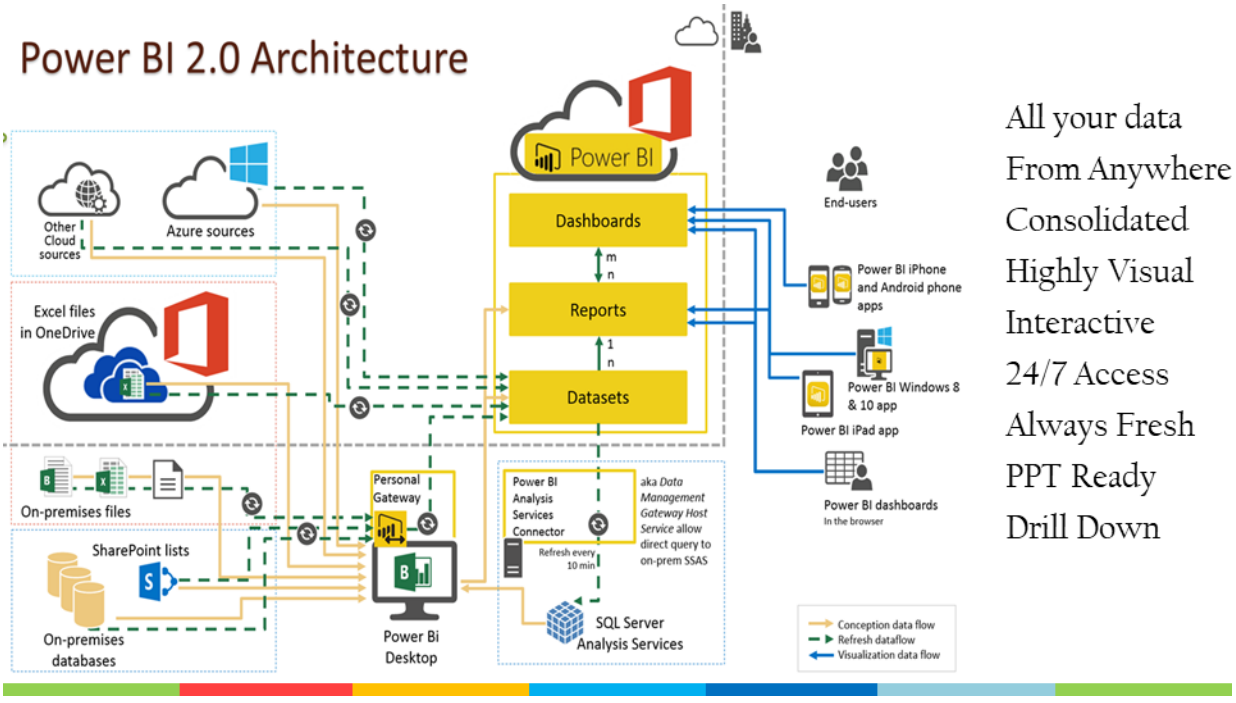
What Is Power BI?





Do more with your data. Integrates seamlessly with Excel. Create more insightful reports that can be automatically refreshed. Allows setting up of threshold points that when reached you will get an email and/or phone notification

> The things that give an organization a strong competitive edge are: 1)what it knows, 2)how it uses what it knows and 3) how fast it knows things.
>
> - Larry Prusak (1996)



All your data
From Anywhere
Consolidated
Highly Visual
Interactive
24/7 Access
Always Fresh
PPT Ready
Drill Down

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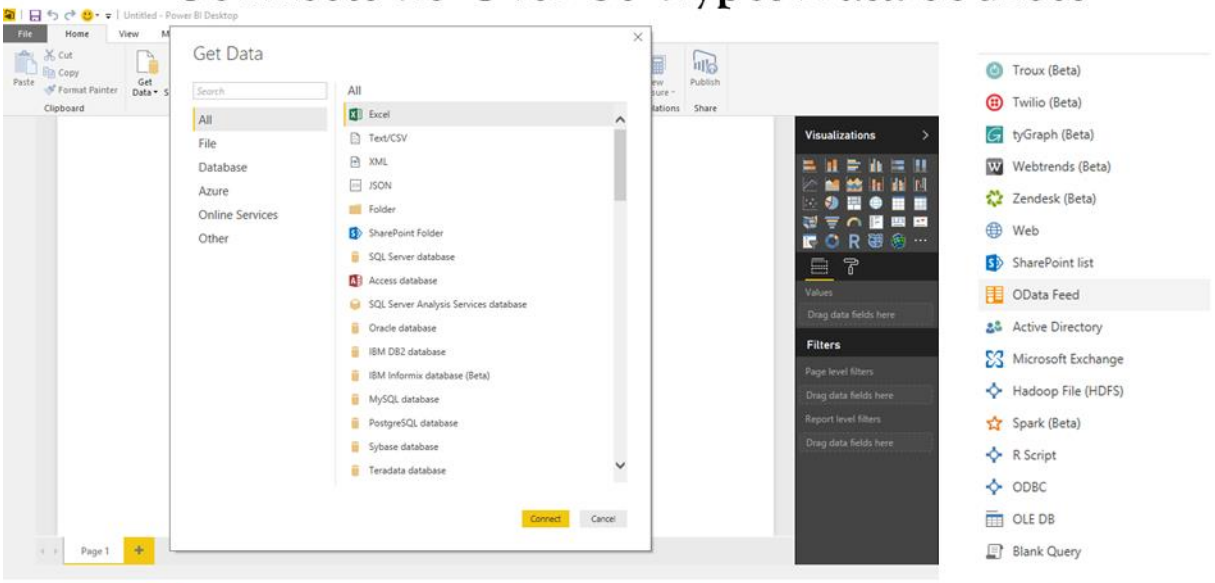
Connects To Over 80 Types Data Sources



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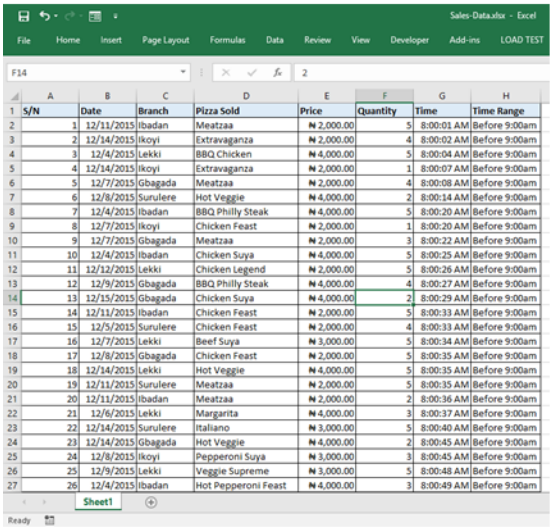
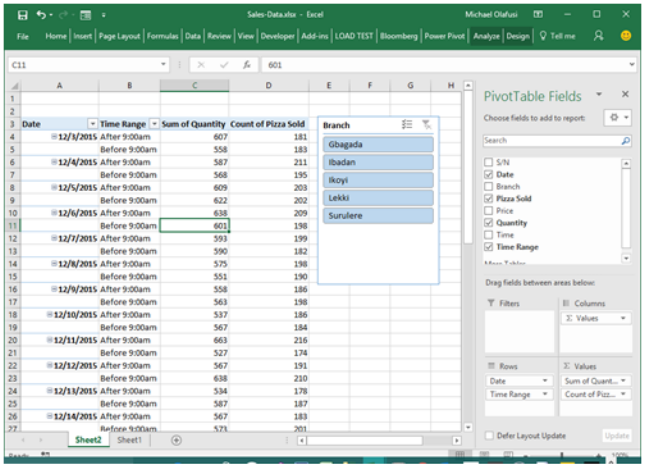
Live Examples: Report in Excel

6



S/N	Date	Branch	Pizza Sold	Price	Quantity	Time	Time Range
1	12/11/2015	Ibadan	Meatzaa	₦ 2,000.00	5	8:00:01 AM	Before 9:00am
2	12/14/2015	Ikoyi	Extravaganza	₦ 2,000.00	4	8:00:02 AM	Before 9:00am
3	12/4/2015	Lekki	BBQ Chicken	₦ 4,000.00	5	8:00:04 AM	Before 9:00am
4	12/14/2015	Ikoyi	Extravaganza	₦ 2,000.00	1	8:00:07 AM	Before 9:00am
5	12/7/2015	Gbagada	Meatzaa	₦ 2,000.00	4	8:00:08 AM	Before 9:00am
6	12/8/2015	Surulere	Hot Veggie	₦ 4,000.00	2	8:00:14 AM	Before 9:00am
7	12/4/2015	Ibadan	BBQ Philly Steak	₦ 4,000.00	5	8:00:20 AM	Before 9:00am
8	12/7/2015	Ikoyi	Chicken Feast	₦ 2,000.00	1	8:00:20 AM	Before 9:00am
9	12/7/2015	Gbagada	Meatzaa	₦ 2,000.00	3	8:00:22 AM	Before 9:00am
10	12/4/2015	Ibadan	Chicken Suya	₦ 4,000.00	5	8:00:25 AM	Before 9:00am
11	12/12/2015	Lekki	Chicken Legend	₦ 2,000.00	5	8:00:26 AM	Before 9:00am
12	12/9/2015	Gbagada	BBQ Philly Steak	₦ 4,000.00	4	8:00:27 AM	Before 9:00am
13	12/15/2015	Gbagada	Chicken Suya	₦ 4,000.00	2	8:00:29 AM	Before 9:00am
14	12/11/2015	Ibadan	Chicken Feast	₦ 2,000.00	5	8:00:33 AM	Before 9:00am
15	12/5/2015	Surulere	Chicken Feast	₦ 2,000.00	4	8:00:33 AM	Before 9:00am
16	12/7/2015	Lekki	Beef Suya	₦ 3,000.00	5	8:00:34 AM	Before 9:00am
17	12/8/2015	Gbagada	Chicken Feast	₦ 2,000.00	5	8:00:35 AM	Before 9:00am
18	12/14/2015	Lekki	Hot Veggie	₦ 4,000.00	5	8:00:35 AM	Before 9:00am
19	12/11/2015	Surulere	Meatzaa	₦ 2,000.00	5	8:00:35 AM	Before 9:00am
20	12/11/2015	Ibadan	Meatzaa	₦ 2,000.00	2	8:00:36 AM	Before 9:00am
21	12/6/2015	Lekki	Margarita	₦ 4,000.00	3	8:00:37 AM	Before 9:00am
22	12/14/2015	Surulere	Italiano	₦ 3,000.00	5	8:00:40 AM	Before 9:00am
23	12/14/2015	Gbagada	Hot Veggie	₦ 4,000.00	2	8:00:45 AM	Before 9:00am
24	12/8/2015	Ikoyi	Pepperoni Suya	₦ 3,000.00	3	8:00:45 AM	Before 9:00am
25	12/9/2015	Lekki	Veggie Supreme	₦ 3,000.00	5	8:00:48 AM	Before 9:00am
26	12/4/2015	Ibadan	Hot Pepperoni Feast	₦ 4,000.00	3	8:00:49 AM	Before 9:00am

The raw data, extracted into Excel



Common Practice: Throw in a Pivot Table, one or two slicers and some formulas.

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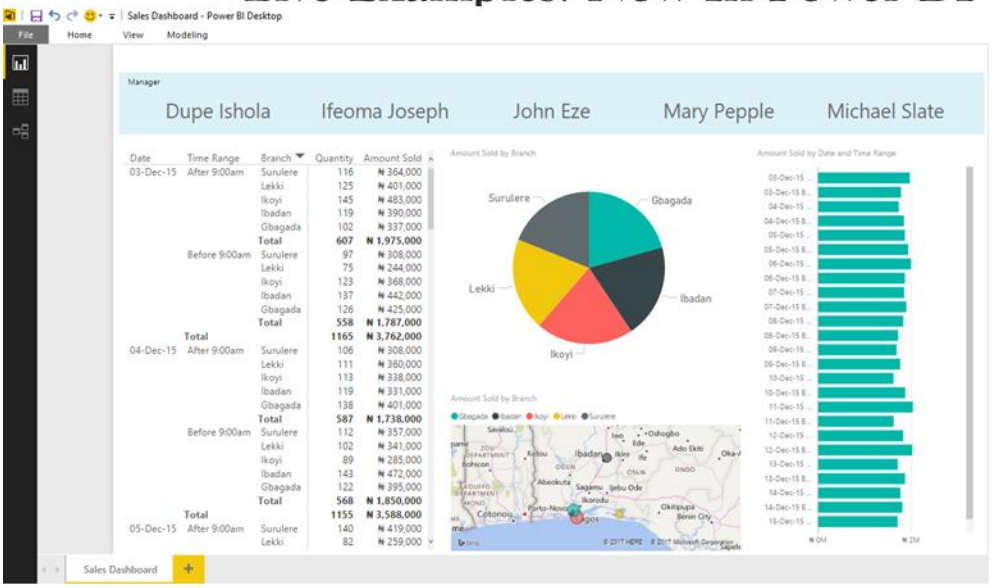
Live Examples: Now In Power BI

7



Visually engaging reports that give you visibility to all insights in your data.
Also allows you to drill-down – from big picture to what's behind it.

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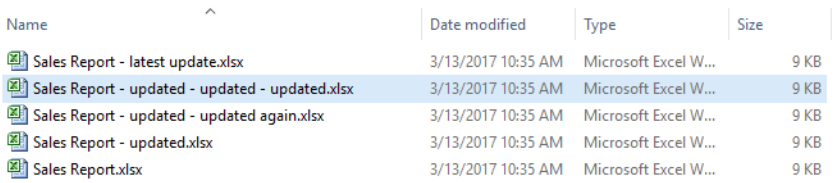
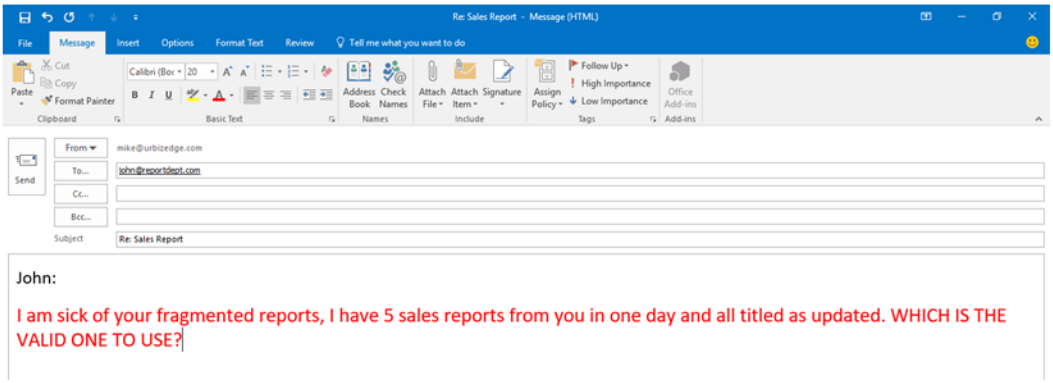
Live Examples: Report Sharing in Excel

8



Name	Date modified	Type	Size
Sales Report - latest update.xlsx	3/13/2017 10:35 AM	Microsoft Excel W...	9 KB
Sales Report - updated - updated - updated.xlsx	3/13/2017 10:35 AM	Microsoft Excel W...	9 KB
Sales Report - updated - updated again.xlsx	3/13/2017 10:35 AM	Microsoft Excel W...	9 KB
Sales Report - updated.xlsx	3/13/2017 10:35 AM	Microsoft Excel W...	9 KB
Sales Report.xlsx	3/13/2017 10:35 AM	Microsoft Excel W...	9 KB



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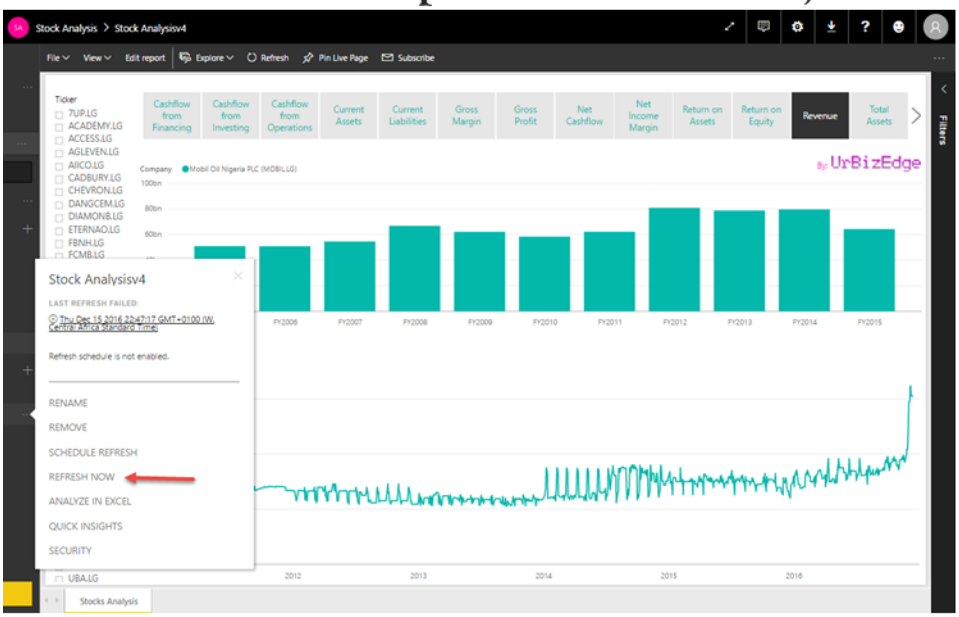
Live Examples: In Power BI, No Problem

9



Update is automatic.

You always have the most recent report, no need of even requesting for it.

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Access Your Reports On Any Of Your Devices

10

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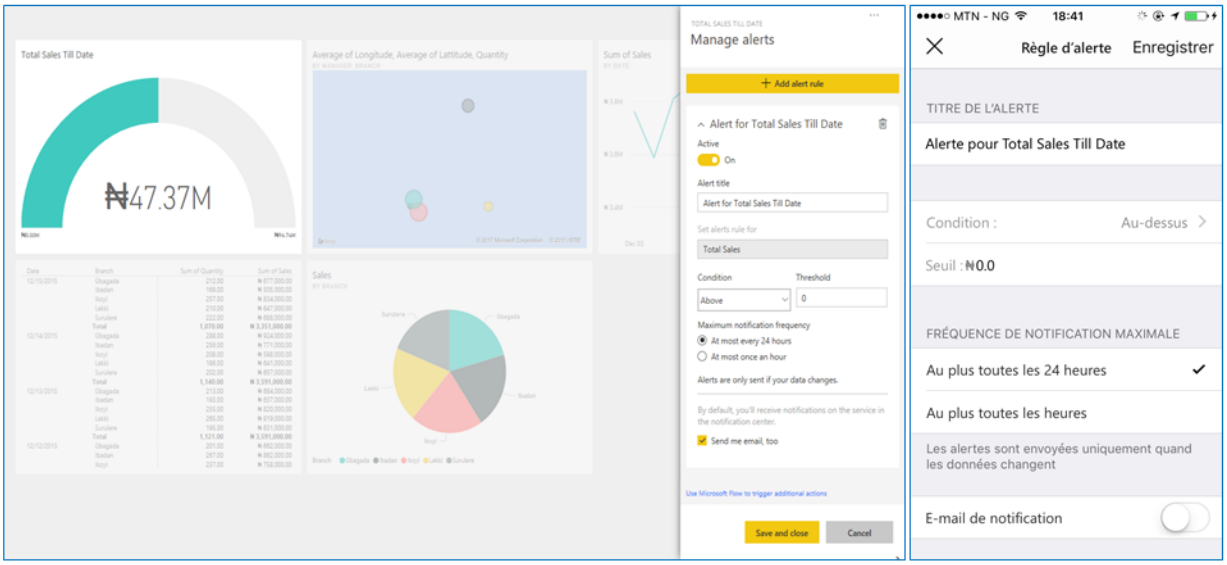
Set Email and Phone Notifications For KPIs

11



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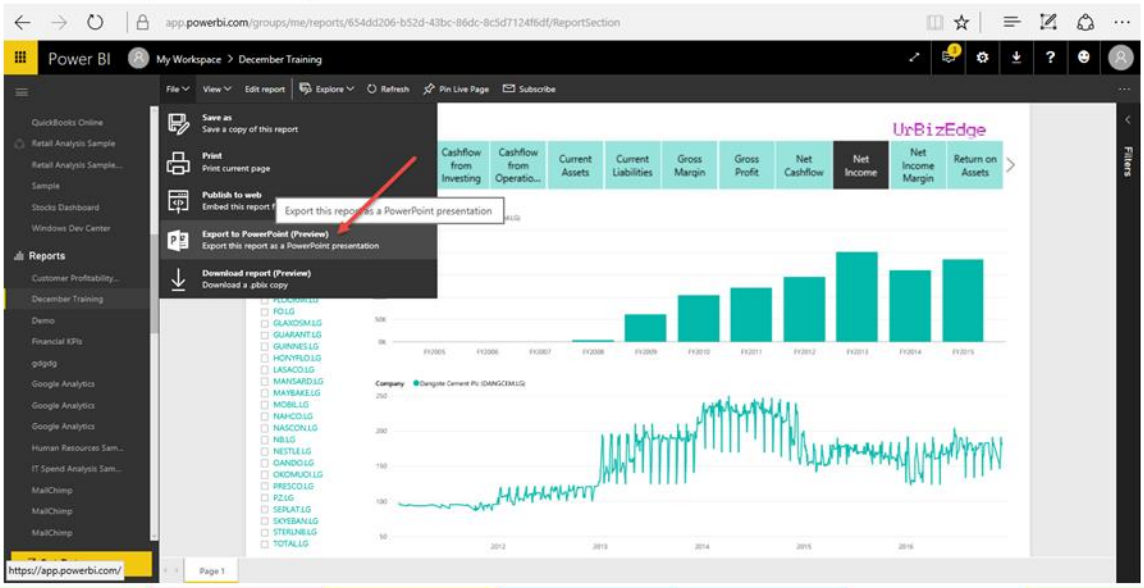
Export Reports To PowerPoint Presentation

12



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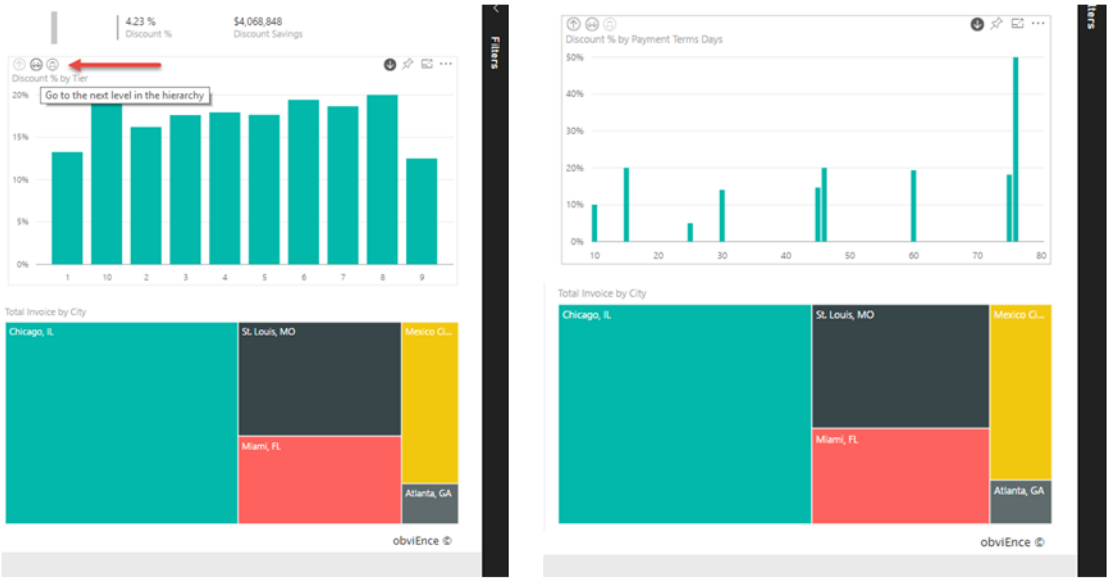
Drill-Down Capabilities

13



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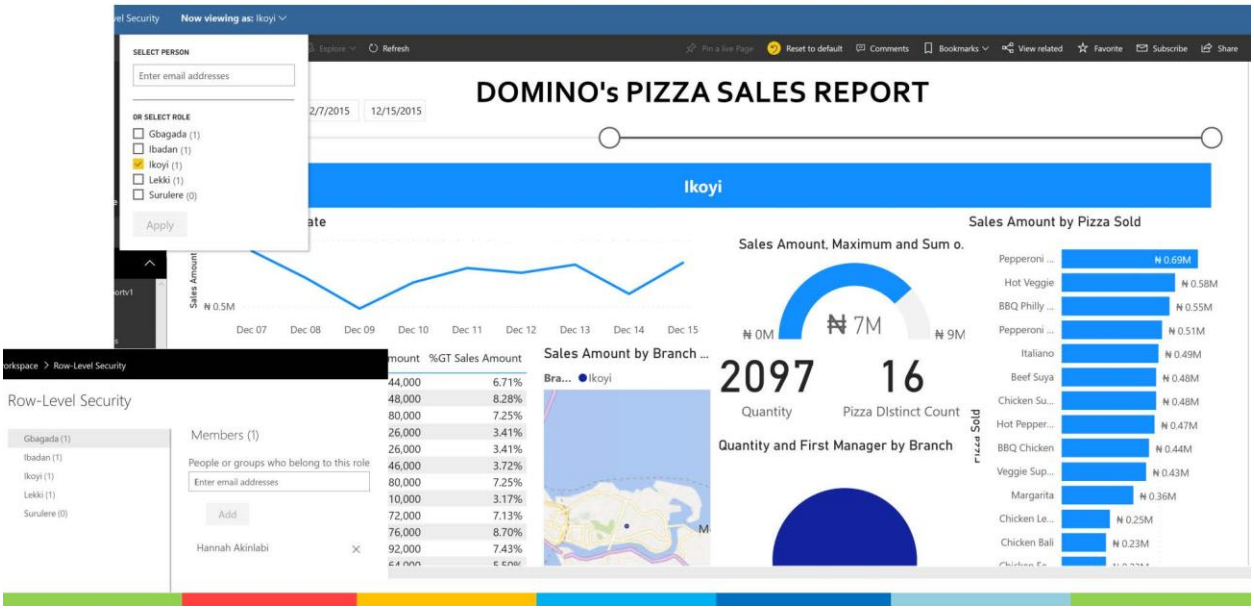
Control Access: Product/Regional Managers

14



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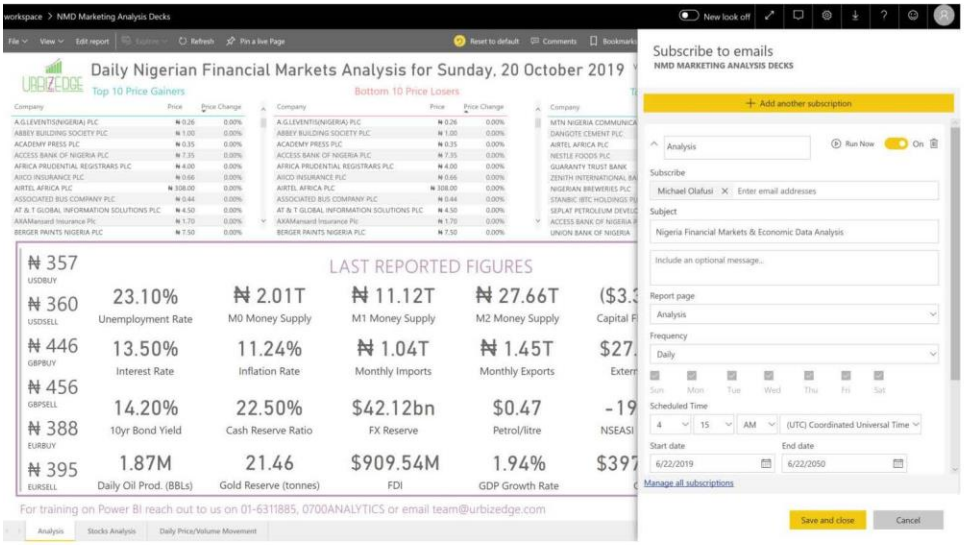
Daily and Weekly Reports Automated Completely

15



Schedule reports to automatically send out as attachment to management staff and other decision makers.

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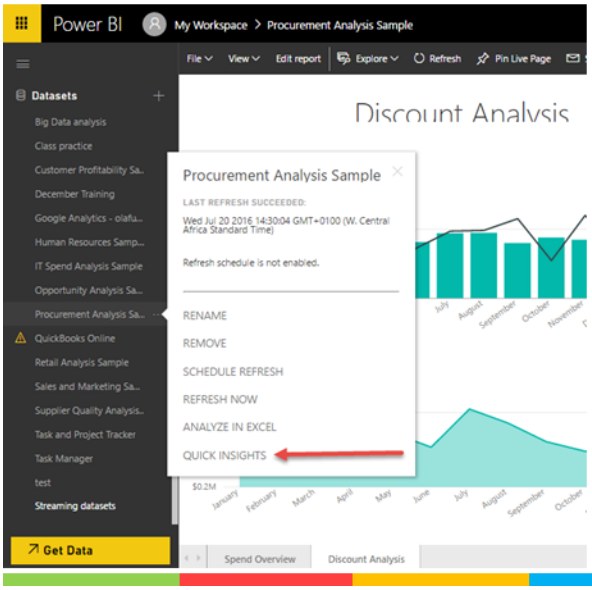
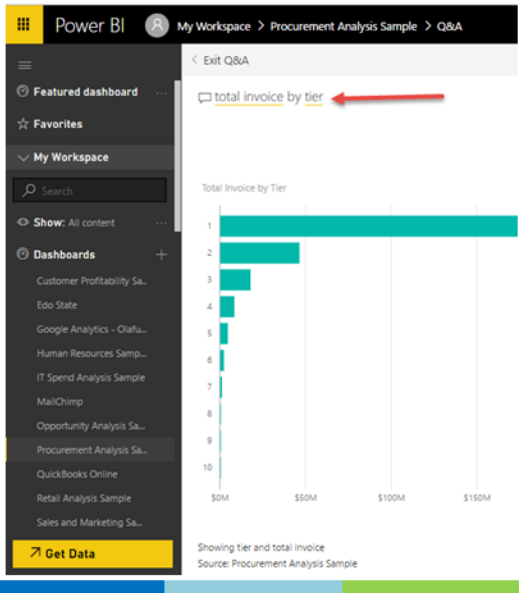
AI To Generate Insights On a Button Click

14





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Doing More With Your Data

15

PAST: What Happened?

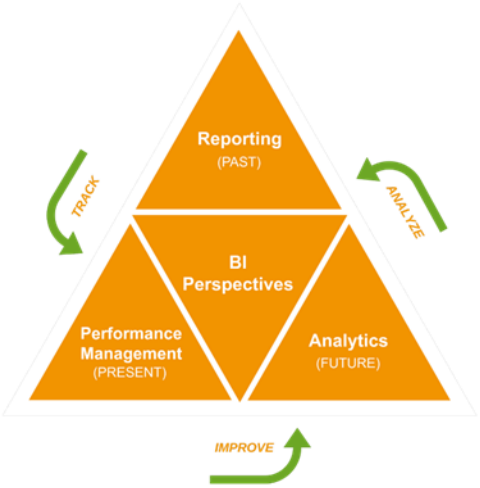
- Reactive reporting
- Common among most companies

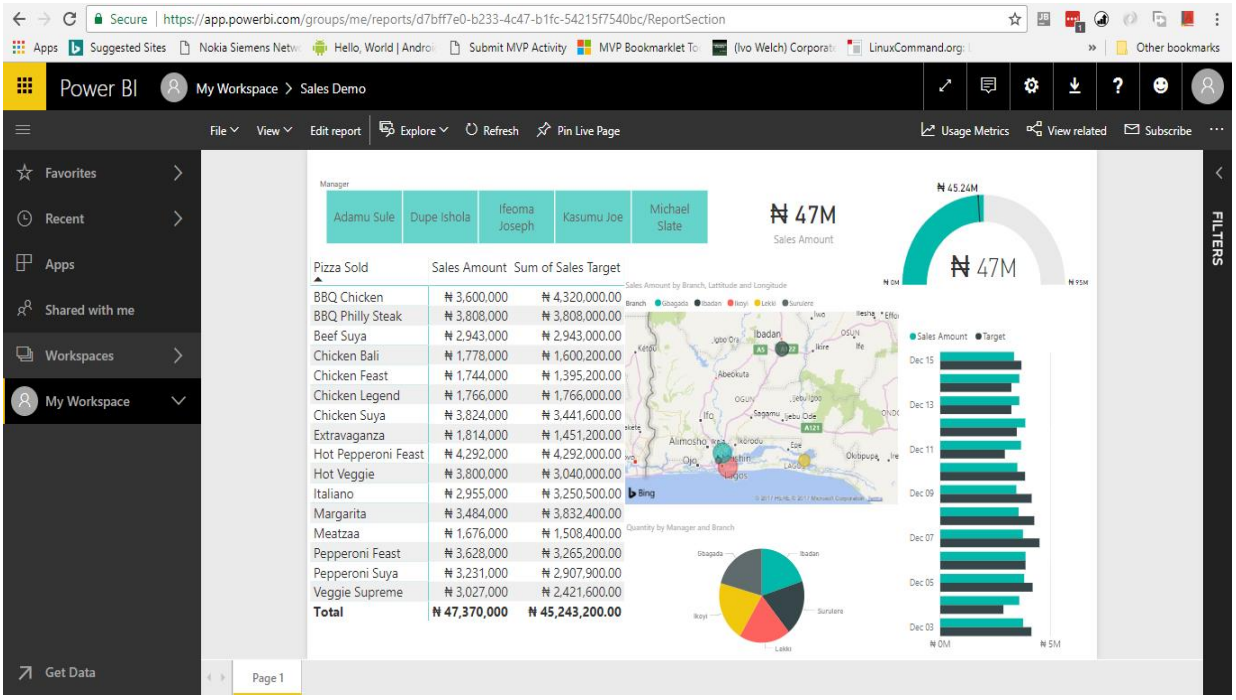
PRESENT: What is Happening?

- KPI's and ROI Concepts
- Streaming analytics

FUTURE: What will Happen?

- Predict based on trends and external data
- Understand impact and what-if analysis




Power BI
My Workspace > Sales Demo
File
View
Edit report
Explore
Refresh
Pin Live Page
Usage Metrics
View related
Subscribe
Favorites
Recent
Apps
Shared with me
Workspaces
My Workspace
Get Data
Adamu Sule
Dupe Ishola
Ifeoma Joseph
Kasumu Joe
Michael Slate
₦ 47M
Sales Amount
₦ 47M
Pizza Sold | Sales Amount | Sum of Sales Target
BBQ Chicken | ₦ 3,600,000 | ₦ 4,320,000.00
BBQ Philly Steak | ₦ 3,808,000 | ₦ 3,808,000.00
Beef Suya | ₦ 2,943,000 | ₦ 2,943,000.00
Chicken Bali | ₦ 1,778,000 | ₦ 1,600,200.00
Chicken Feast | ₦ 1,744,000 | ₦ 1,395,200.00
Chicken Legend | ₦ 1,766,000 | ₦ 1,766,000.00
Chicken Suya | ₦ 3,824,000 | ₦ 3,441,600.00
Extravaganza | ₦ 1,814,000 | ₦ 1,451,200.00
Hot Pepperoni Feast | ₦ 4,292,000 | ₦ 4,292,000.00
Hot Veggie | ₦ 3,800,000 | ₦ 3,040,000.00
Italiano | ₦ 2,955,000 | ₦ 3,250,500.00
Margarita | ₦ 3,484,000 | ₦ 3,832,400.00
Meatzaa | ₦ 1,676,000 | ₦ 1,508,400.00
Pepperoni Feast | ₦ 3,628,000 | ₦ 3,265,200.00
Pepperoni Suya | ₦ 3,231,000 | ₦ 2,907,900.00
Veggie Supreme | ₦ 3,027,000 | ₦ 2,421,600.00
Total | ₦ 47,370,000 | ₦ 45,243,200.00
Sales Amount
Target
FILTERS
Page 1

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24
Register for Training
We have the only Microsoft Excel MVP in Africa and have held training for people from Vodacom, Airtel, IBM, SABMiller, Nestle & Lafarge.
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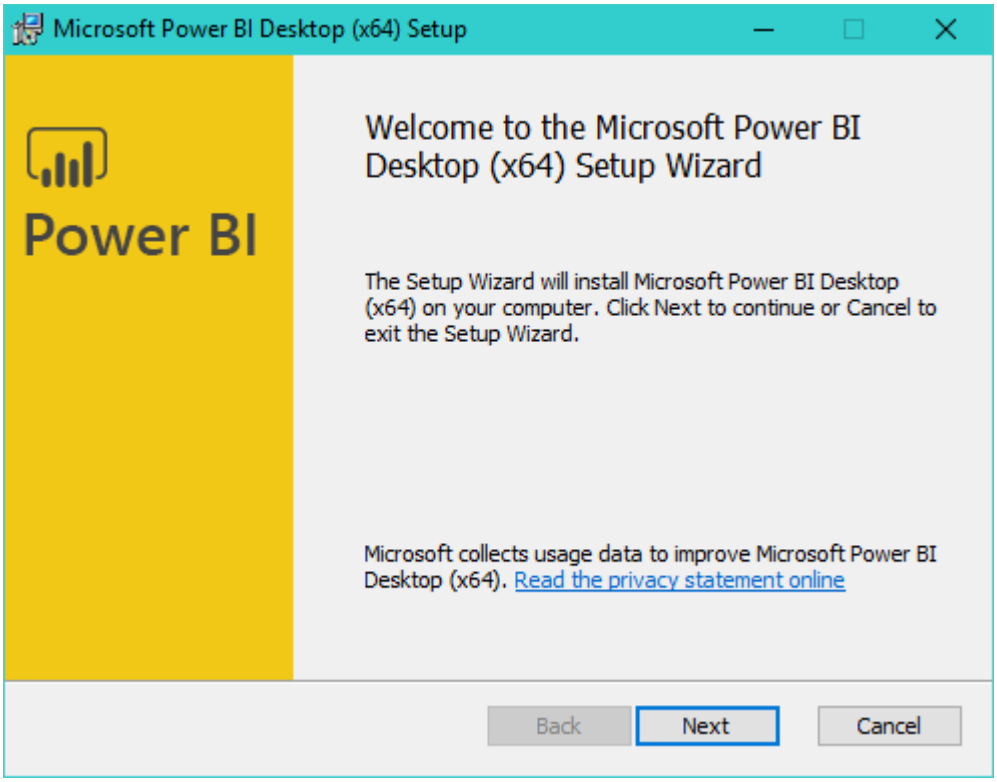
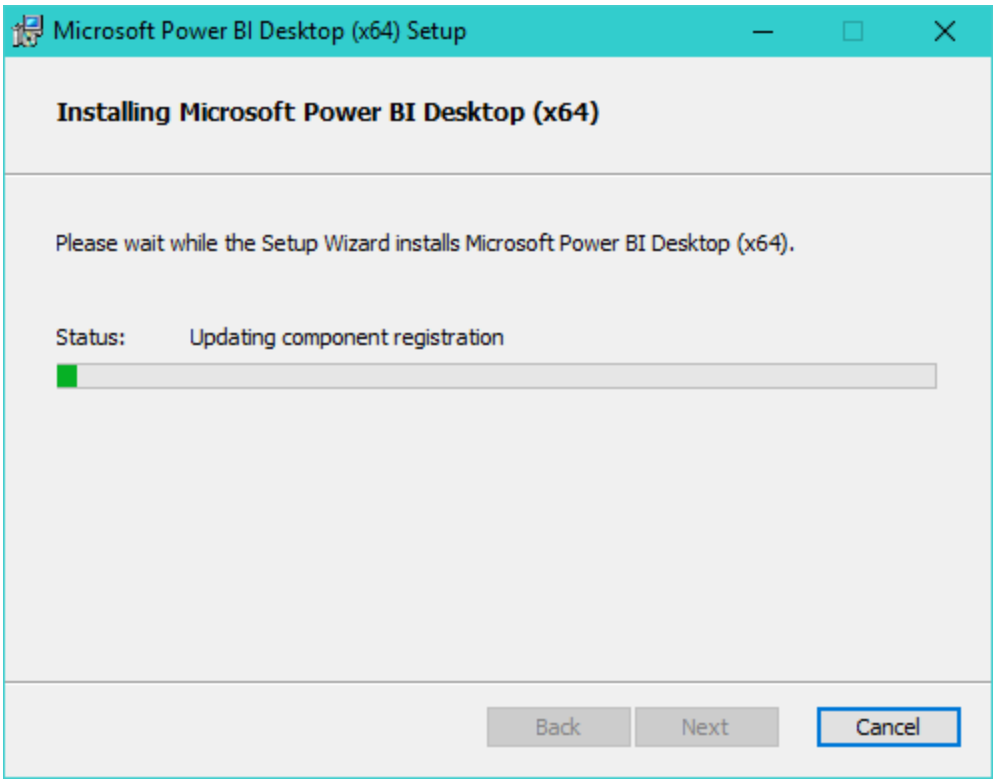
info@urbizedge.com
www.urbizedge.com

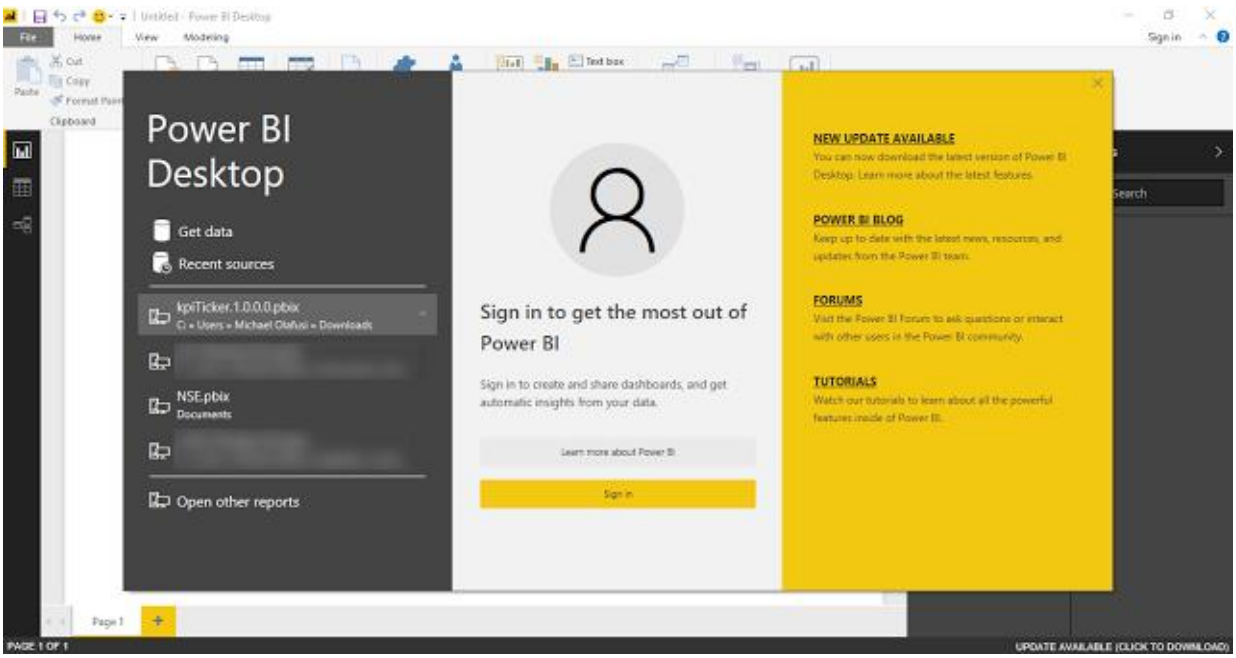
Getting To Know The Power BI Desktop

The Power BI Desktop is the main tool you would be using in creating Power BI reports. You can [freely download it here from Microsoft](https://powerbi.microsoft.com/en-us/desktop/) (https://powerbi.microsoft.com/en-us/desktop/).


Microsoft Power BI Desktop (x64) Setup
Power BI
Welcome to the Microsoft Power BI Desktop (x64) Setup Wizard
The Setup Wizard will install Microsoft Power BI Desktop (x64) on your computer. Click Next to continue or Cancel to exit the Setup Wizard.
Microsoft collects usage data to improve Microsoft Power BI Desktop (x64). Read the privacy statement online
Back
Next
Cancel

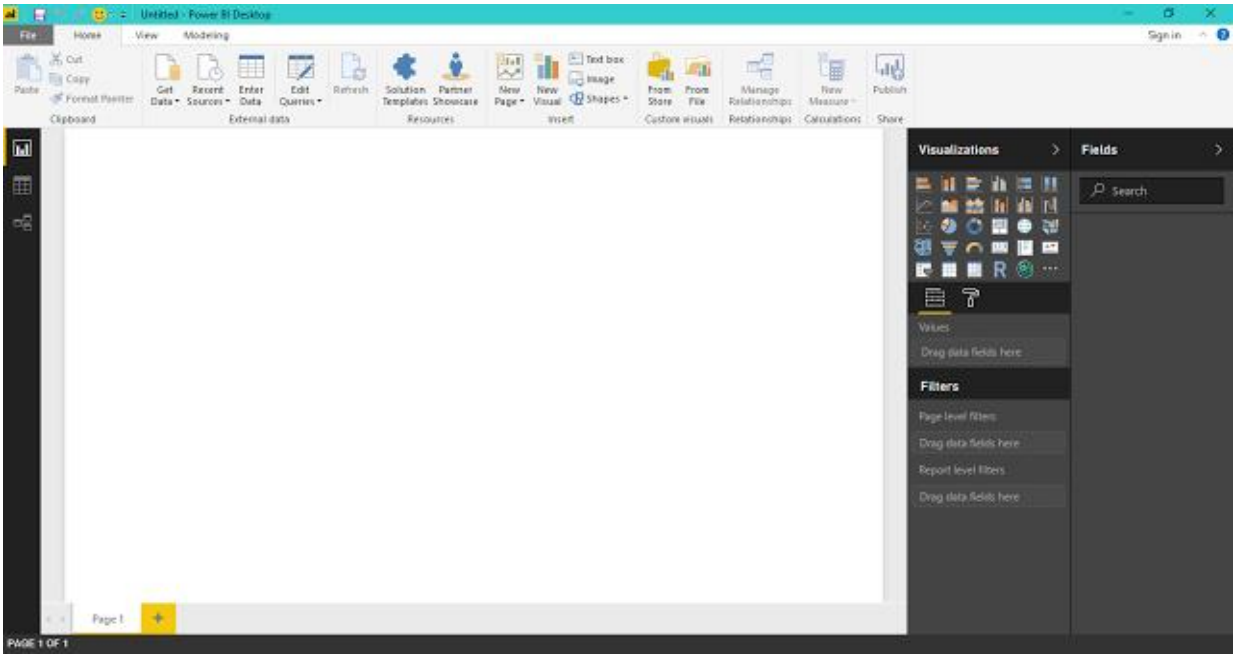

Microsoft Power BI Desktop (x64) Setup
Installing Microsoft Power BI Desktop (x64)
Please wait while the Setup Wizard installs Microsoft Power BI Desktop (x64).
Status: Updating component registration
Back
Next
Cancel

Once you are done installing it. You get a startup screen like the one below.

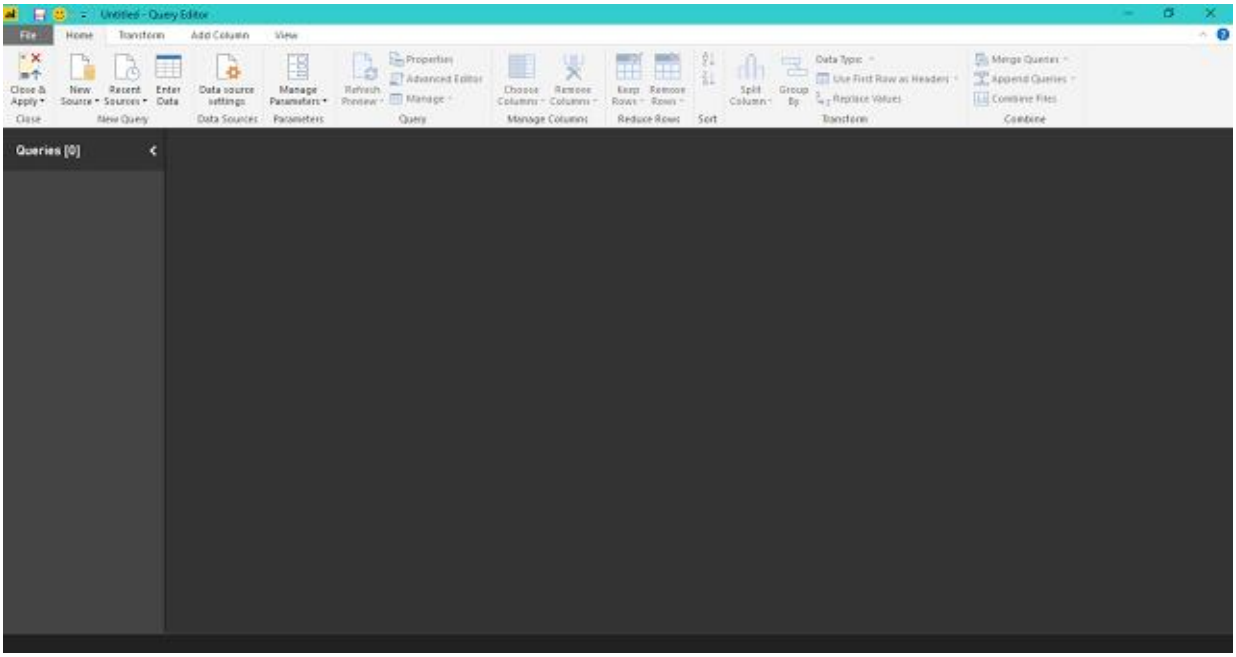

Power BI Desktop
Get data
Recent sources
kpiTicker.1.0.0.0.pbix
NSE.pbix
Documents
Open other reports
Sign in to get the most out of Power BI
Sign in to create and share dashboards, and get automatic insights from your data.
Learn more about Power BI
Sign in
NEW UPDATE AVAILABLE
You can now download the latest version of Power BI Desktop. Learn more about the latest features.
POWER BI BLOG
Keep up to date with the latest news, resources, and updates from the Power BI team.
FORUMS
Visit the Power BI Forum to ask questions or interact with other users in the Power BI community.
TUTORIALS
Watch our tutorials to learn about all the powerful features inside of Power BI.
Page 1
PAGE 1 OF 1
UPDATE AVAILABLE (CLICK TO DOWNLOAD)

There are two major parts of Power BI Desktop you will need to get very familiar with:

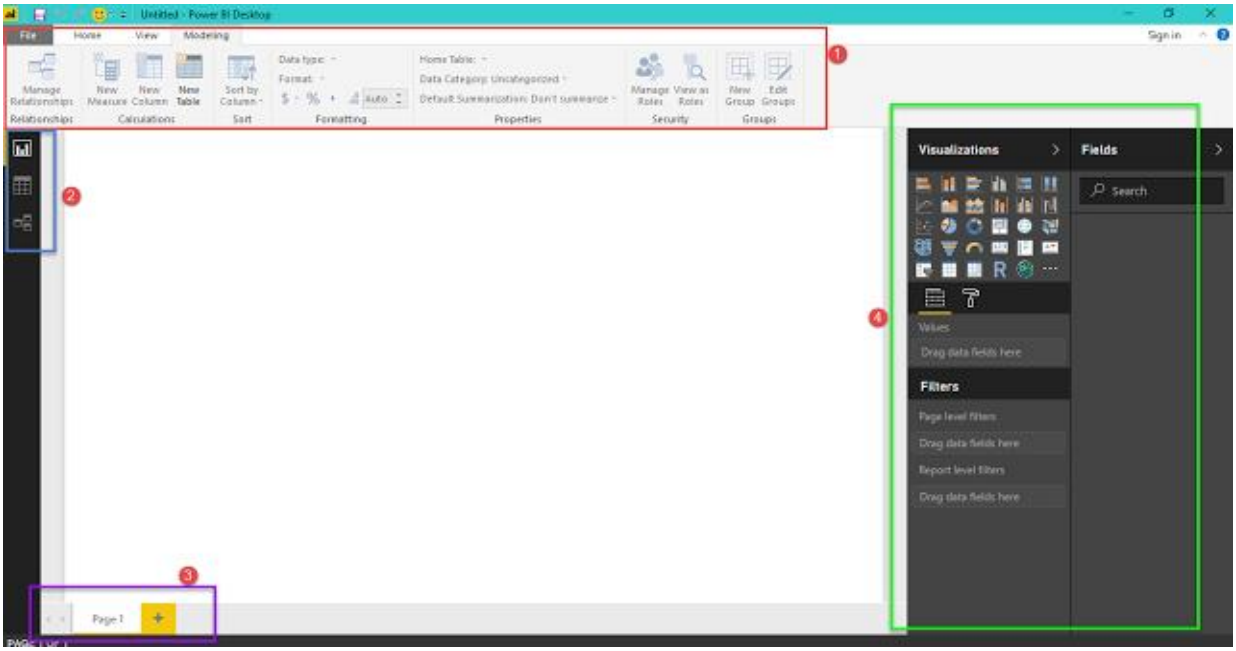
1. The Designer part.



2. The Power Query Editor part.



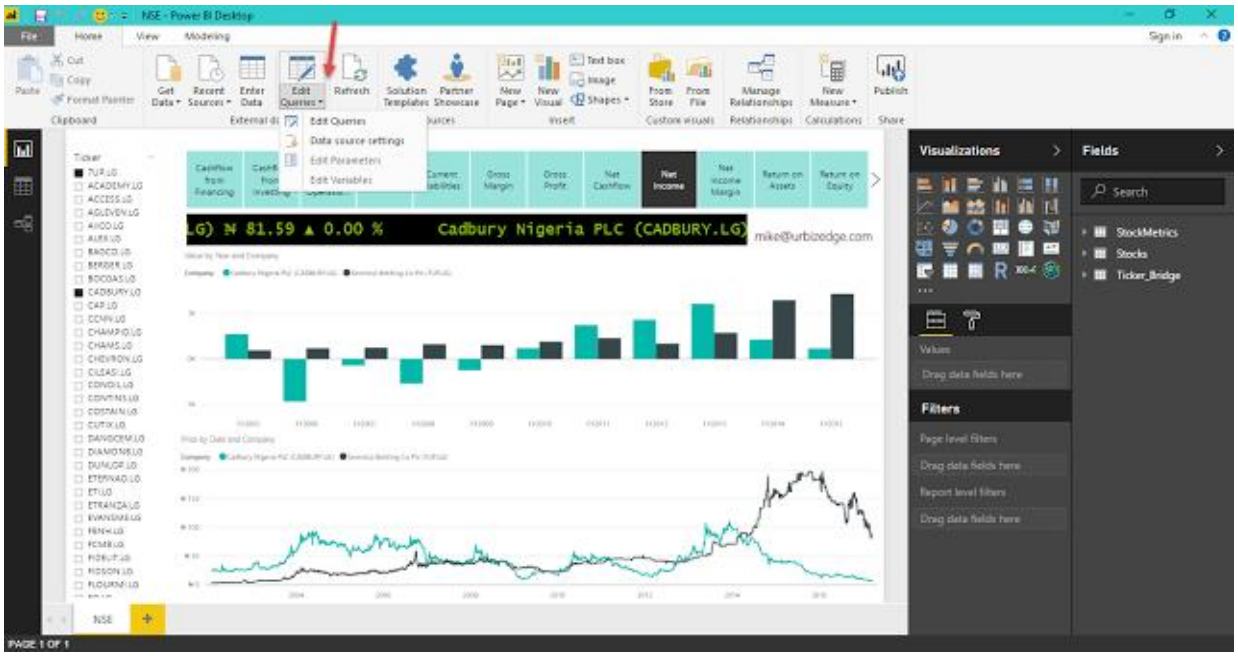
Let's start first with the Designer part or the main Power BI window. It is the window you are presented with upon launching Power BI. It has four main sections.



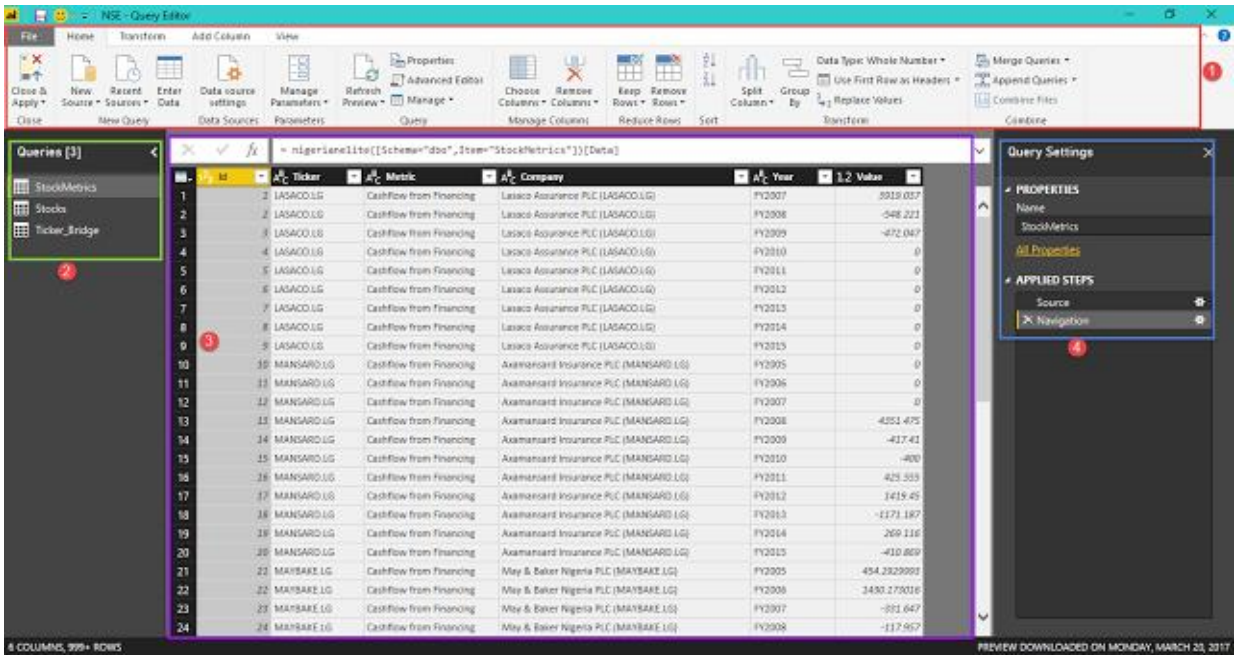
1. The menu section comprising File (for Open, Save, Options/Preference settings etc.), Home, View and Modelling.
2. The Report, Data and Model tabs section
3. Page section (like Sheets in Excel), and
4. The context based section. This section shows Fields and Visualization when you are in Reports, Fields only when you are in Data, and Fields and Properties when you are in Model.

Now to the Power Query Editor. It is the exact equivalent of Power Query in Excel. Its main function is to help you wrangle data before they are fully loaded/downloaded into the Power BI. So instead of downloading a 16 GB database table and then specifying which fields/rows to keep and which to discard, you can do the specifying using just a preview of the data and only import just the very data you want/need. This is a life and time saver. And space/memory saver too. Then you can do some very interesting and complex stuff you can't do from the Designer part -- like merge or append data from different sources, unpivot and a few other things I find myself doing repeatedly on client/commercial projects. It allows you to do some scripting too via its M Language. So you can do the equivalent of common formulas and more in the Power Query Editor.

You get to the Power Query Editor from the Home menu in the Designer part.



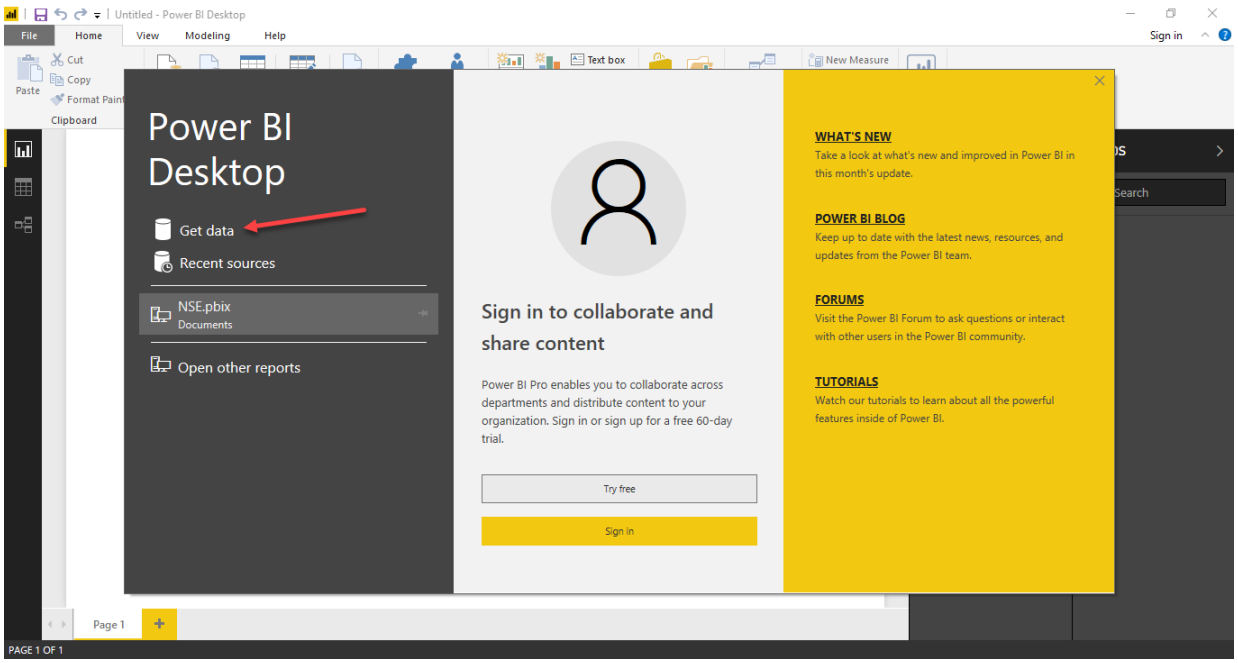
And it has four sections too.



1. The menu section
2. The Queries section
3. The Data Preview section, and
4. The Query Settings section (which only shows up when you have/selected a Query)

The Power Query Editor

When you launch the Power BI Desktop, the start up screen you get has Get Data on the top left side.


Untitled - Power BI Desktop
File
Home
View
Modeling
Help
Sign in
Cut
Copy
Format Painter
Paste
Clipboard
Text box
New Measure
Power BI Desktop
Get data
Recent sources
NSE.pbix
Documents
Open other reports
Sign in to collaborate and share content
Power BI Pro enables you to collaborate across departments and distribute content to your organization. Sign in or sign up for a free 60-day trial.
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Sign in
WHAT'S NEW
Take a look at what's new and improved in Power BI in this month's update.
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Keep up to date with the latest news, resources, and updates from the Power BI team.
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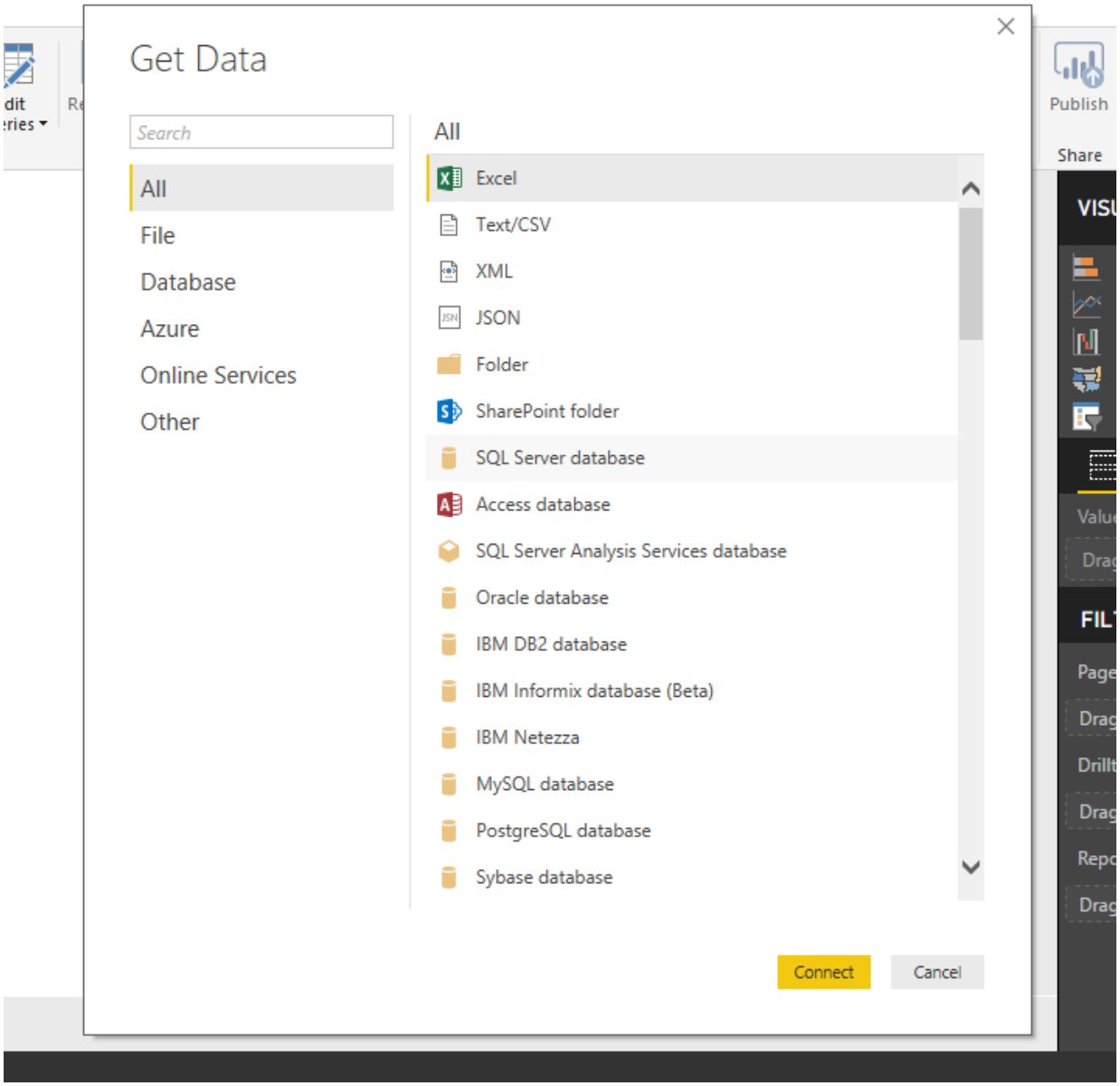
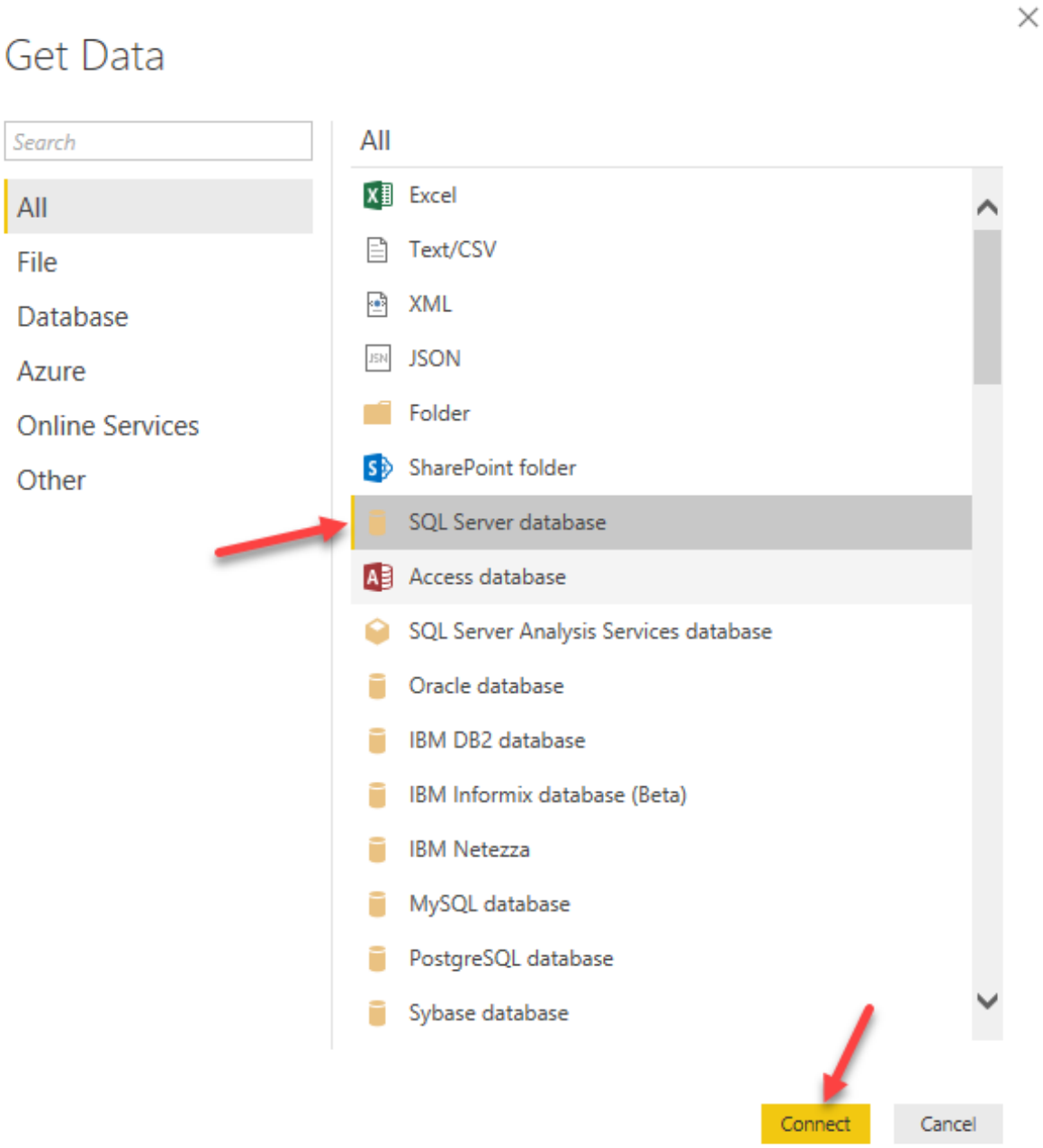
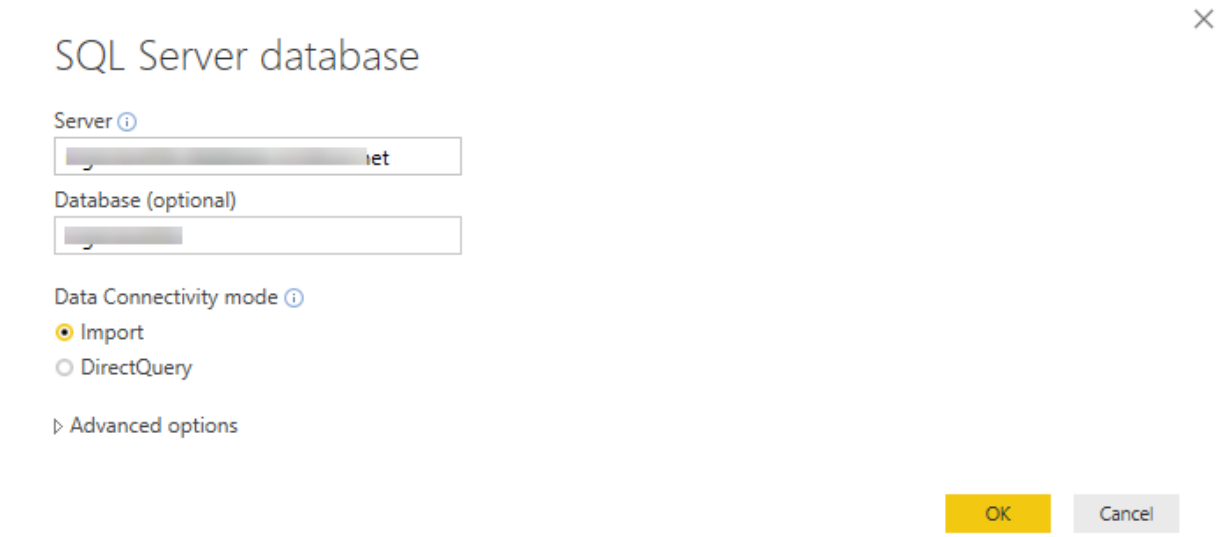
Search
Page 1
PAGE 1 OF 1

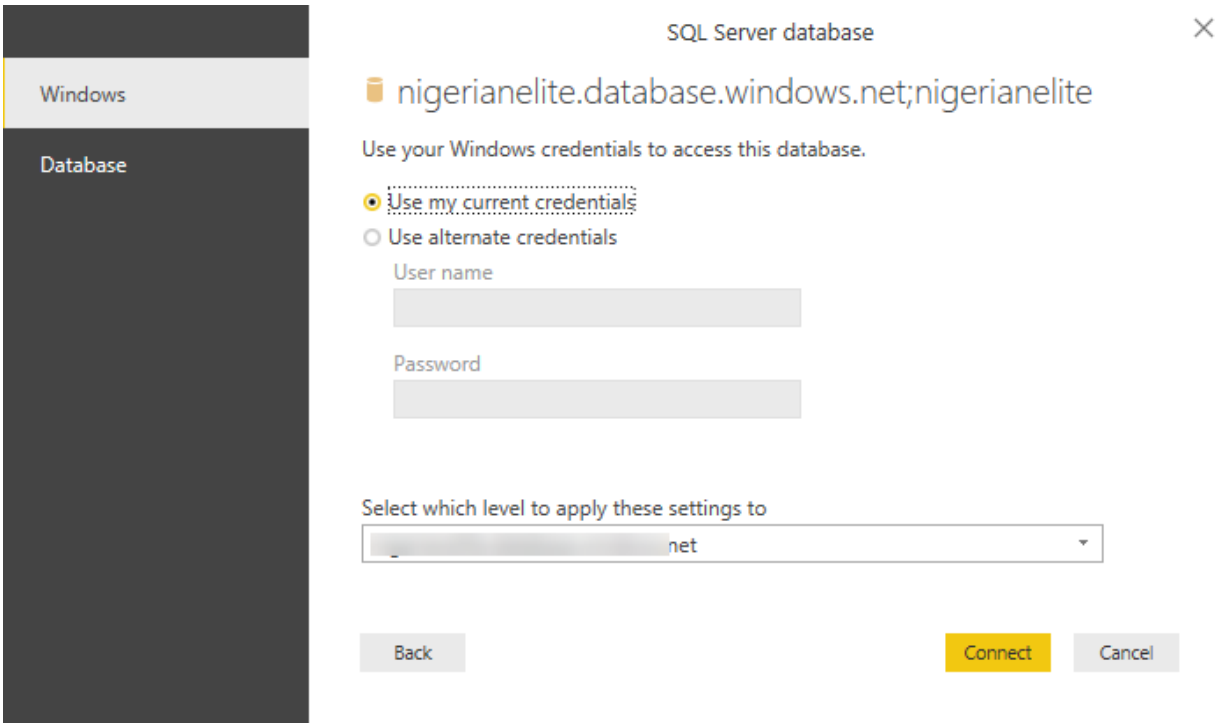
The Get Data is the your first window into the Power Query Editor. If you are familiar with Excel, the Power Query Editor is the exact replica of Excel's Power Query Editor.

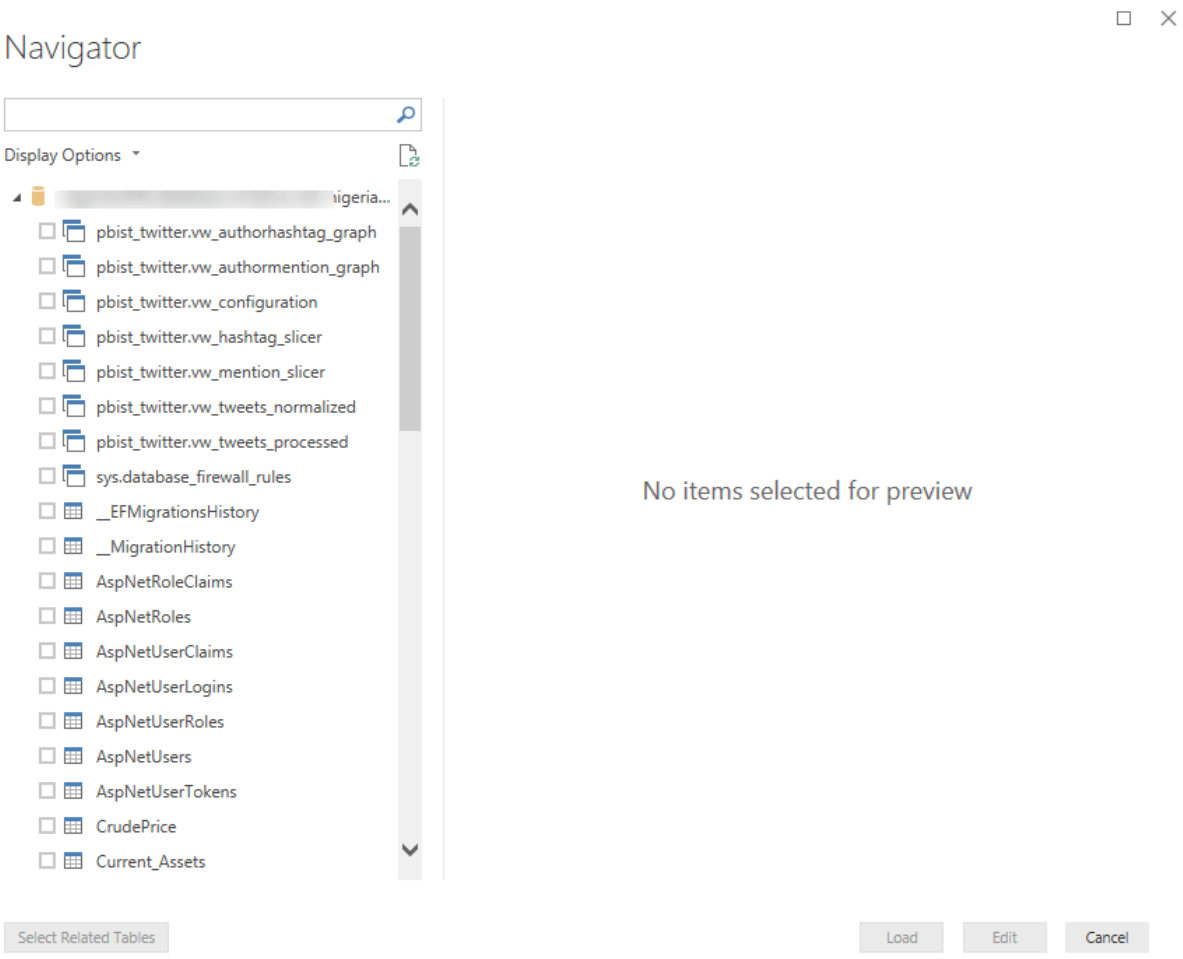


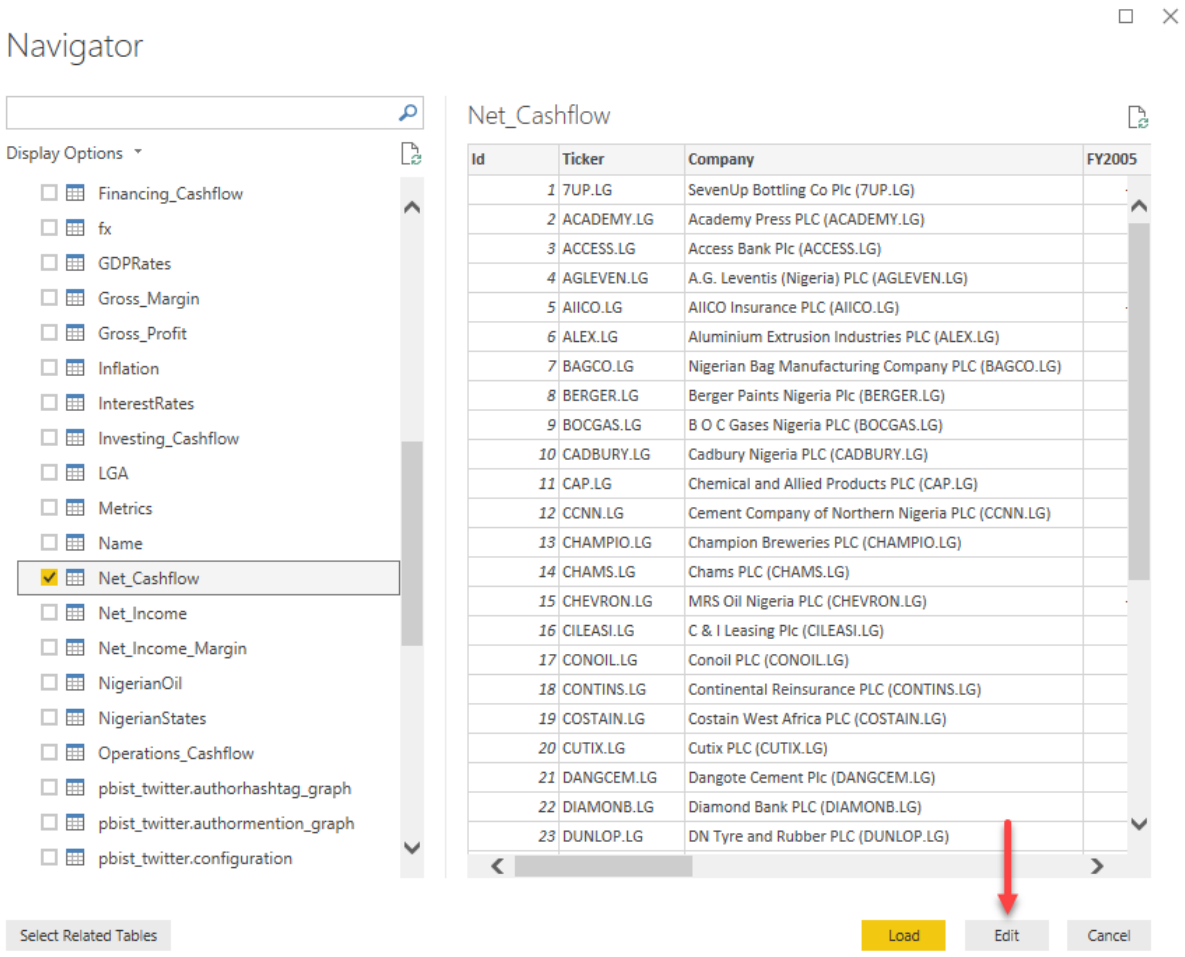
In Power BI, it is your main data manipulation and data cleaning tool. Once you connect to the data you want to analyse, it is good to go to the Query Editor to examine the data and if the data needs some cleaning or transformation, do all that transformation in the Query Editor.


Get Data
Search
All
File
Database
Azure
Online Services
Other
All
Excel
Text/CSV
XML
JSON
Folder
SharePoint folder
SQL Server database
Access database
SQL Server Analysis Services database
Oracle database
IBM DB2 database
IBM Informix database (Beta)
IBM Netezza
MySQL database
PostgreSQL database
Sybase database
Connect
Cancel


SQL Server database
Server
Database (optional)
Data Connectivity mode
Import
DirectQuery
Advanced options
OK
Cancel

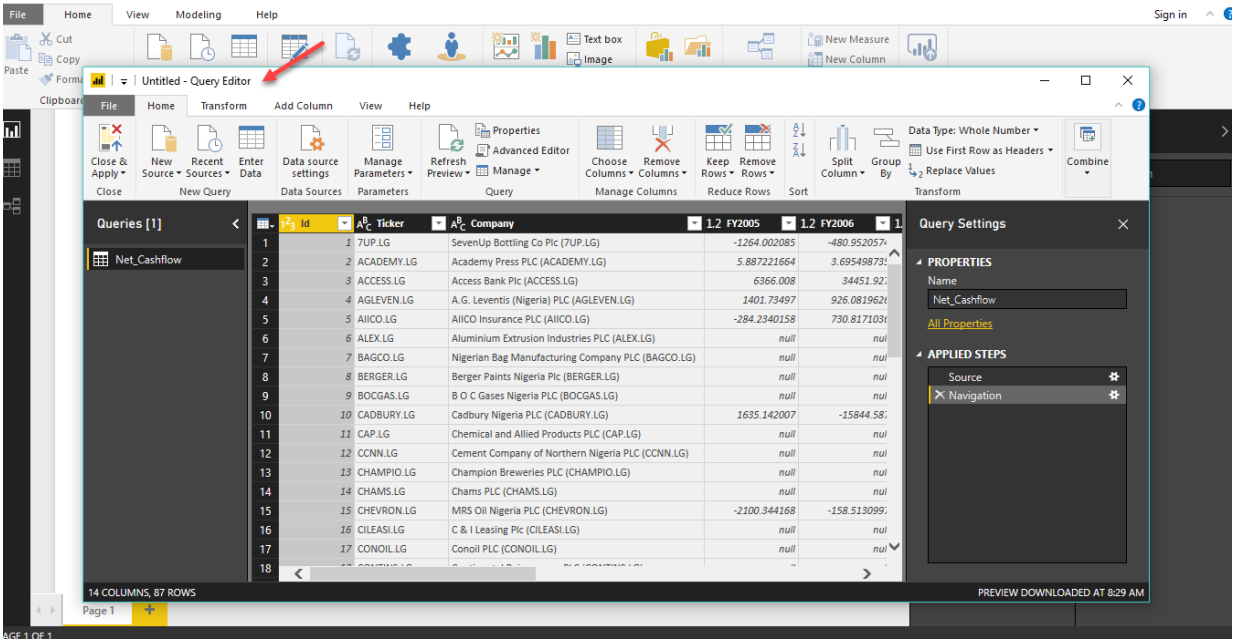

Windows
Database
SQL Server database
nigerianelite.database.windows.net;nigerianelite
Use your Windows credentials to access this database.
Use my current credentials
Use alternate credentials
User name
Password
Select which level to apply these settings to
Back
Connect
Cancel


Navigator
Display Options
[redacted]igeria...
pbist_twitter.vw_authorhashtag_graph
pbist_twitter.vw_authormention_graph
pbist_twitter.vw_configuration
pbist_twitter.vw_hashtag_slicer
pbist_twitter.vw_mention_slicer
pbist_twitter.vw_tweets_normalized
pbist_twitter.vw_tweets_processed
sys.database_firewall_rules
__EFMigrationsHistory
__MigrationHistory
AspNetRoleClaims
AspNetRoles
AspNetUserClaims
AspNetUserLogins
AspNetUserRoles
AspNetUsers
AspNetUserTokens
CrudePrice
Current_Assets
No items selected for preview
Select Related Tables
Load
Edit
Cancel

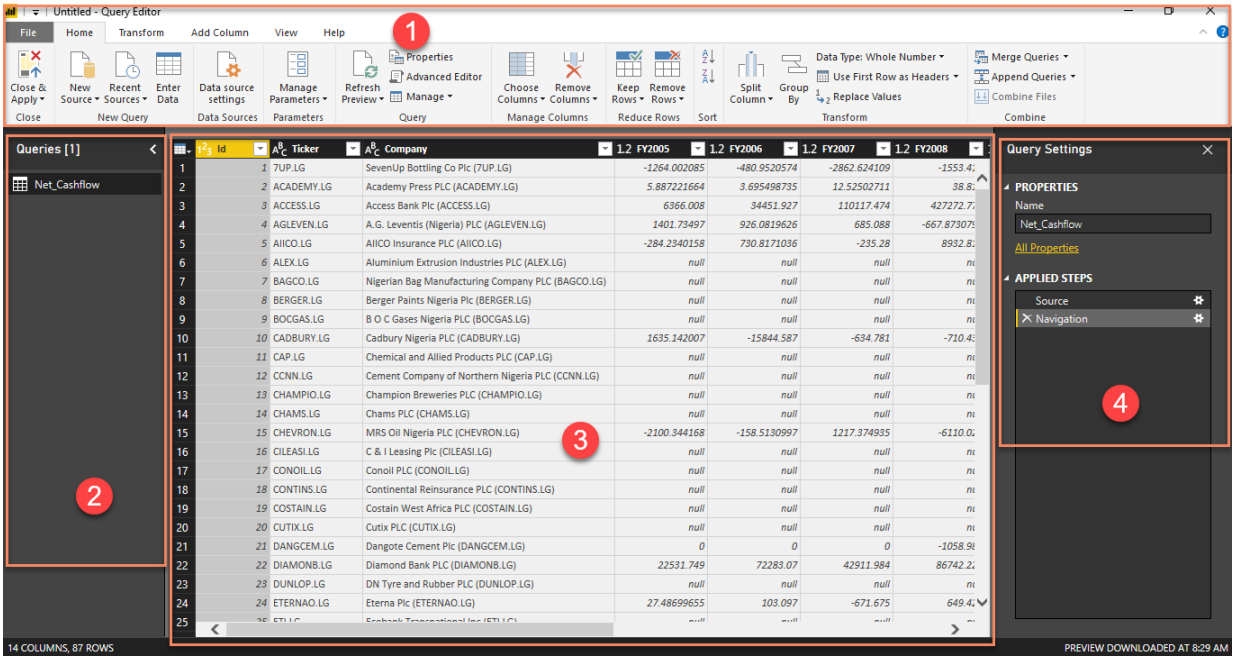


Clicking on Edit (or Transform Data) when finally done takes you to the Power Query Editor.

Below is what the Power Query Editor looks like and it always opens as a separate window from the main Power BI window.



The Power Query Editor can be divided into four functional sections.

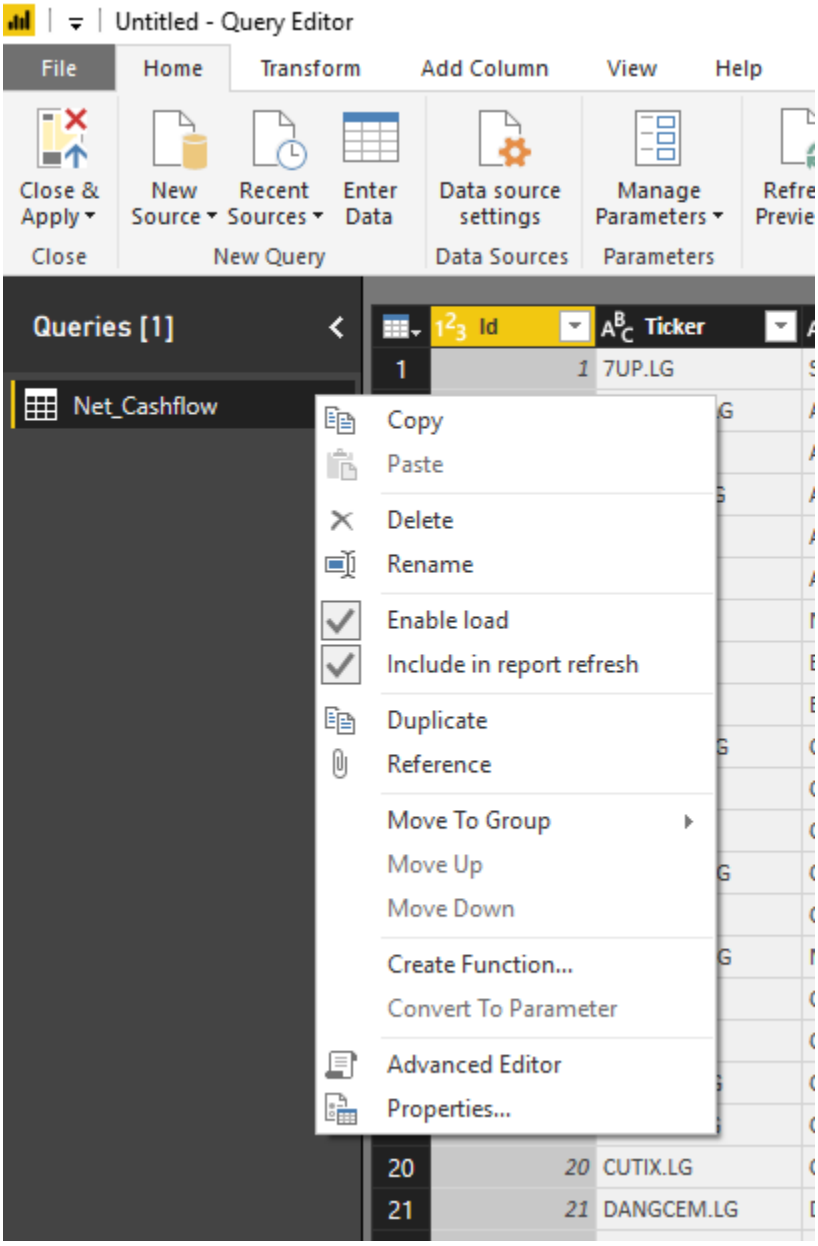


1. Menu section
2. Queries section
3. Data Preview section, and
4. Query Settings section.

The Menu section is more like the control panel housing all the tools you will need for most of your data cleaning and data transformation processes. In the end, it is a

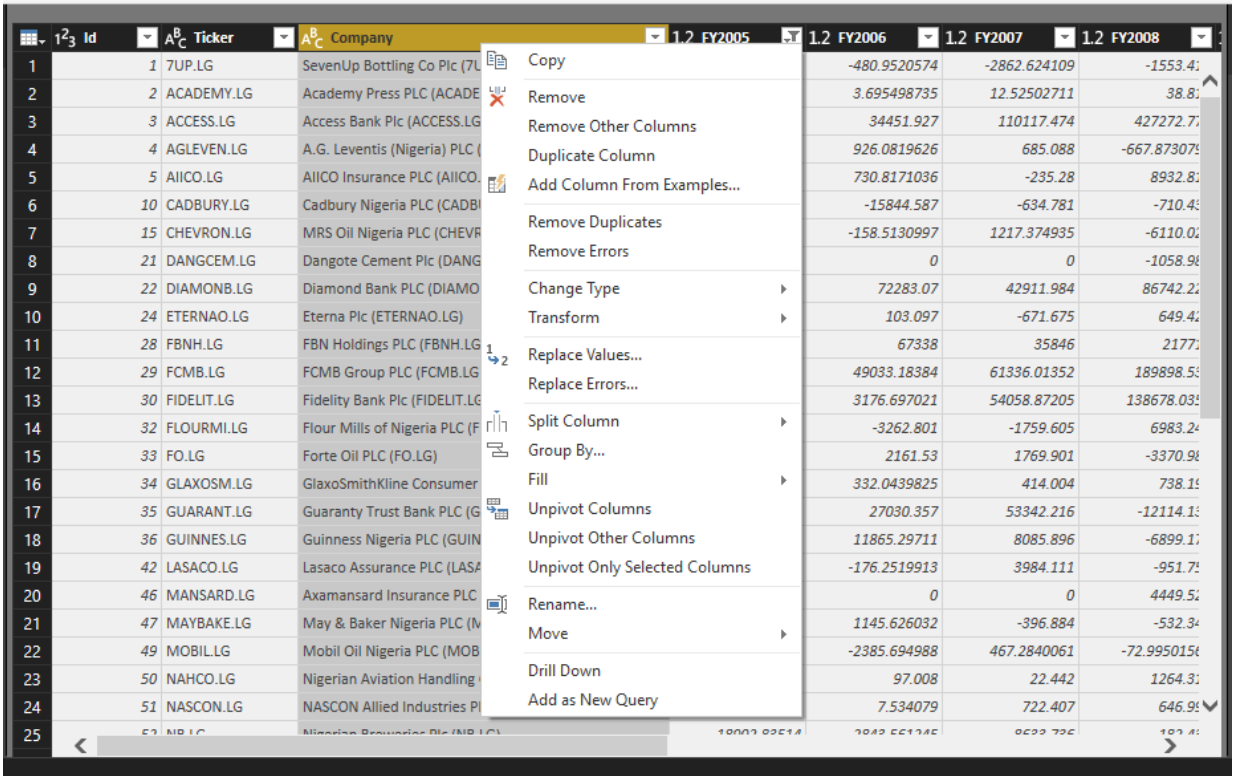
section you will have to be very conversant with and we will do some practical demonstration of real world analysis that involves using this section.

The Queries section mainly lists all the data sources you are connected to. Right-clicking on any of the data source gives you some very useful set of options.

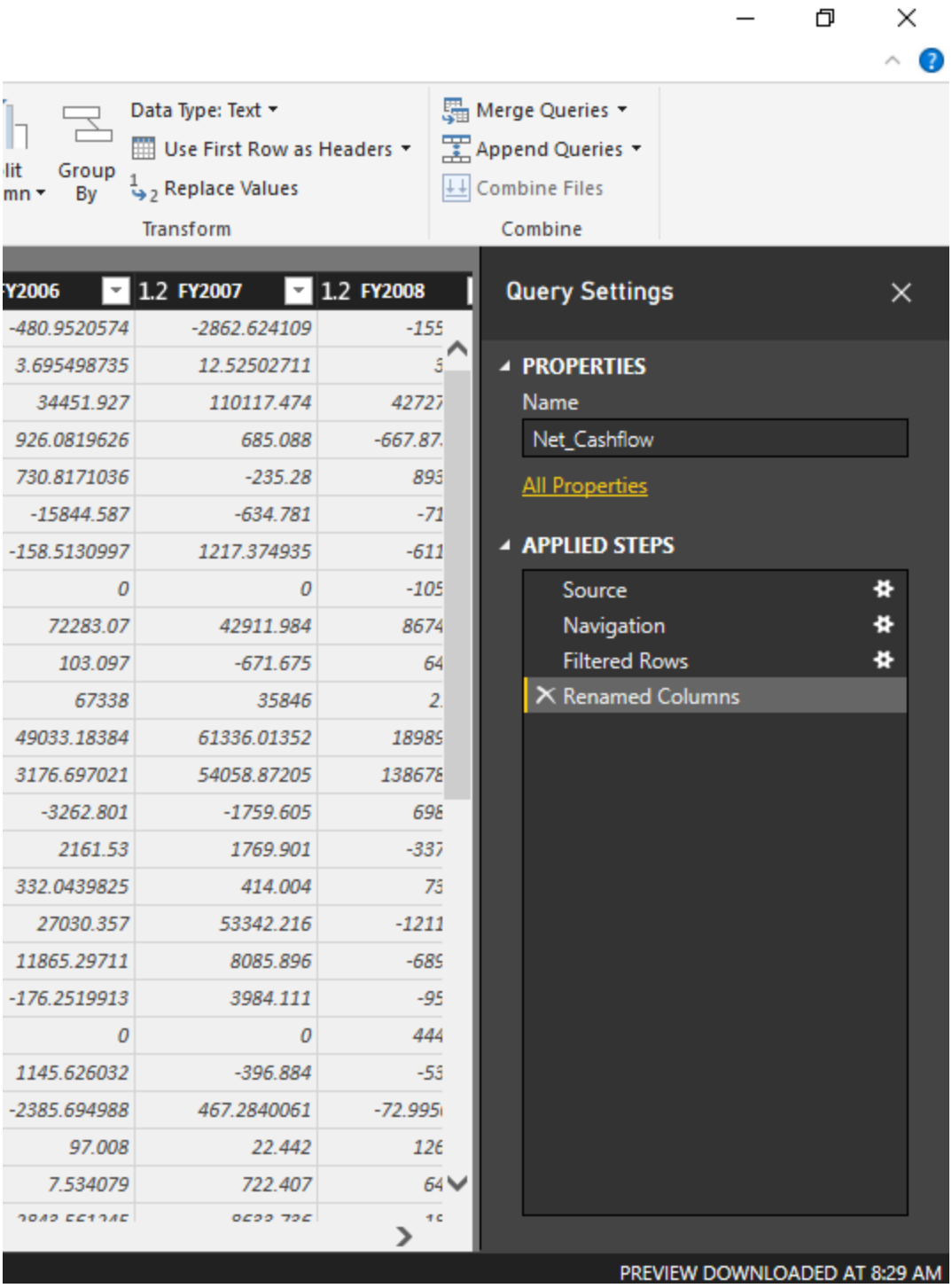


The Data Preview section shows a preview of the data selected in the Queries section. This gives using the Power Query Editor some advantages over loading the data directly into the Data model, especially in a case of a large data set that would take too many system resources and time to load. By loading just a preview, one can get working immediately on the data and even set filters and formulas to pull in just the

segment of the dataset that is needed rather than pulling in the entire dataset. It also has some useful features — like filter, rename, delete, replace errors and others.



The Query Settings serves as a very interactive and feature-rich audit trail. It allows you to see all the transformation steps carried out in applied order. You can modify any step and re-order the steps if you want.

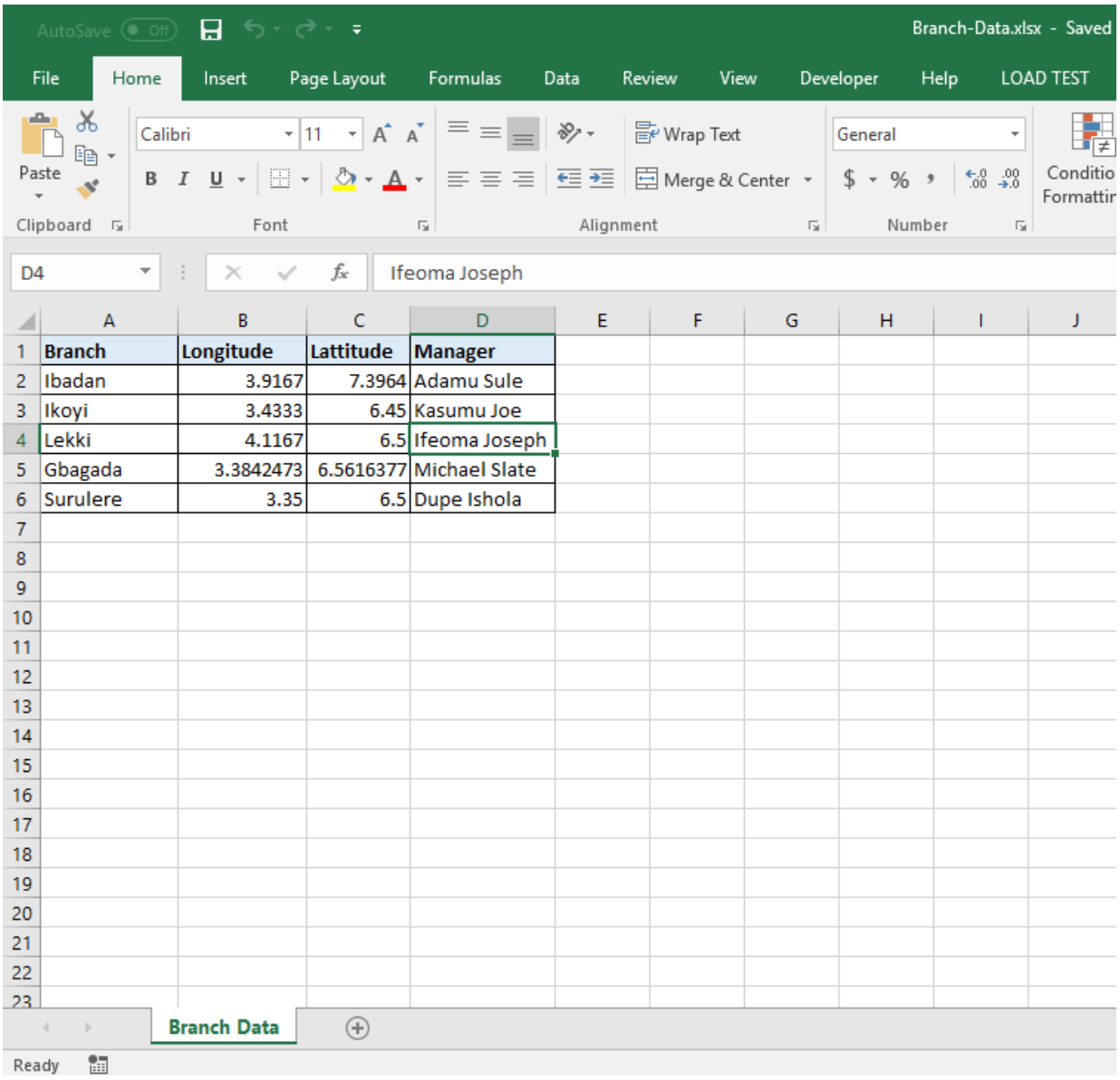


In future chapters we will do a few demonstrations that will help us further dive into the Power Query Editor and see its practical usefulness.

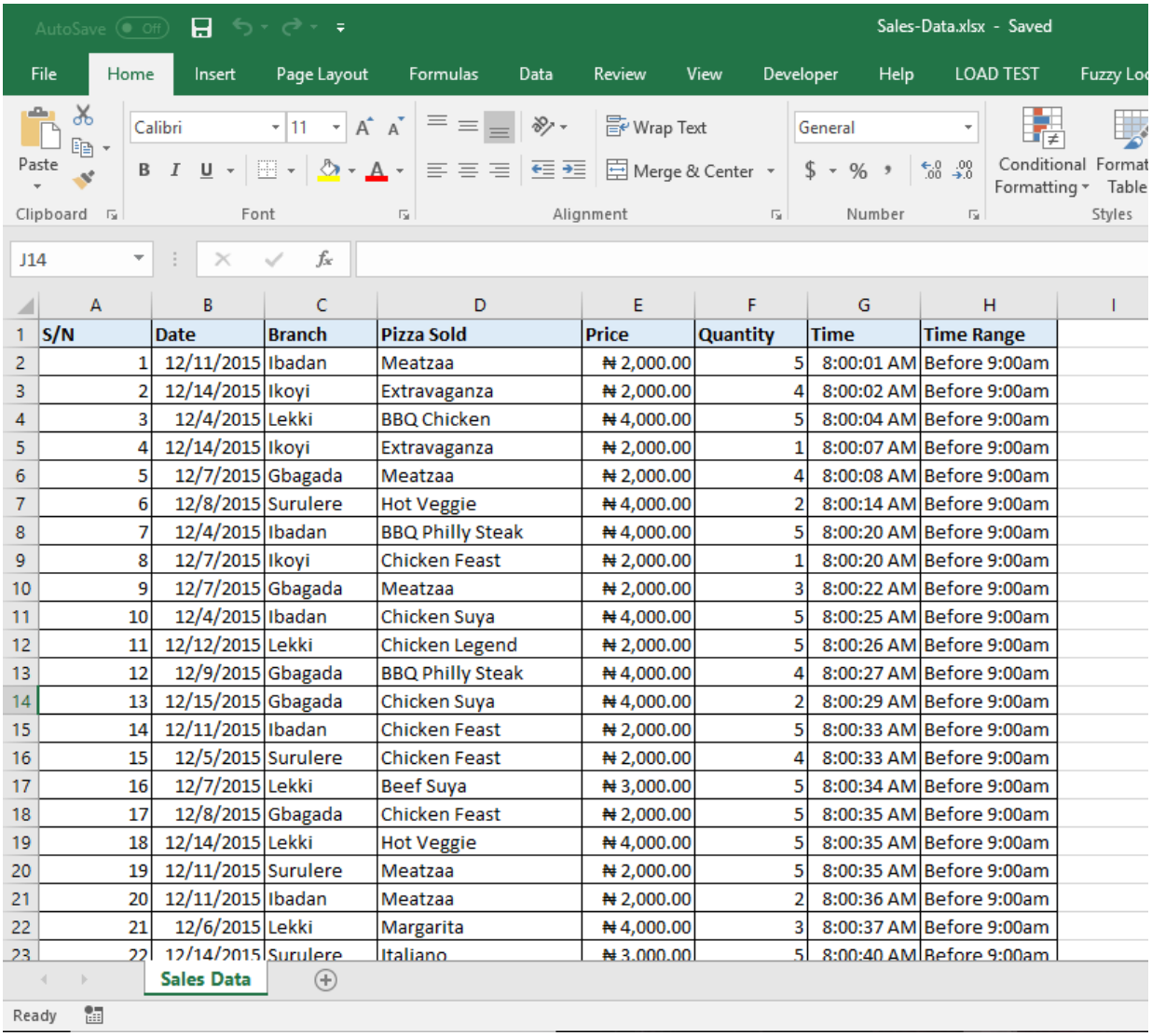
Sample Project On Analysing Sales Data By Branch, Product And Target

For this sample project, we are going to build a Power BI report and dashboard for Domino's Pizza. I have gotten some fictitious data on their branches in Nigeria, two weeks sales data, daily target figures and product target figures for the period under analysis.

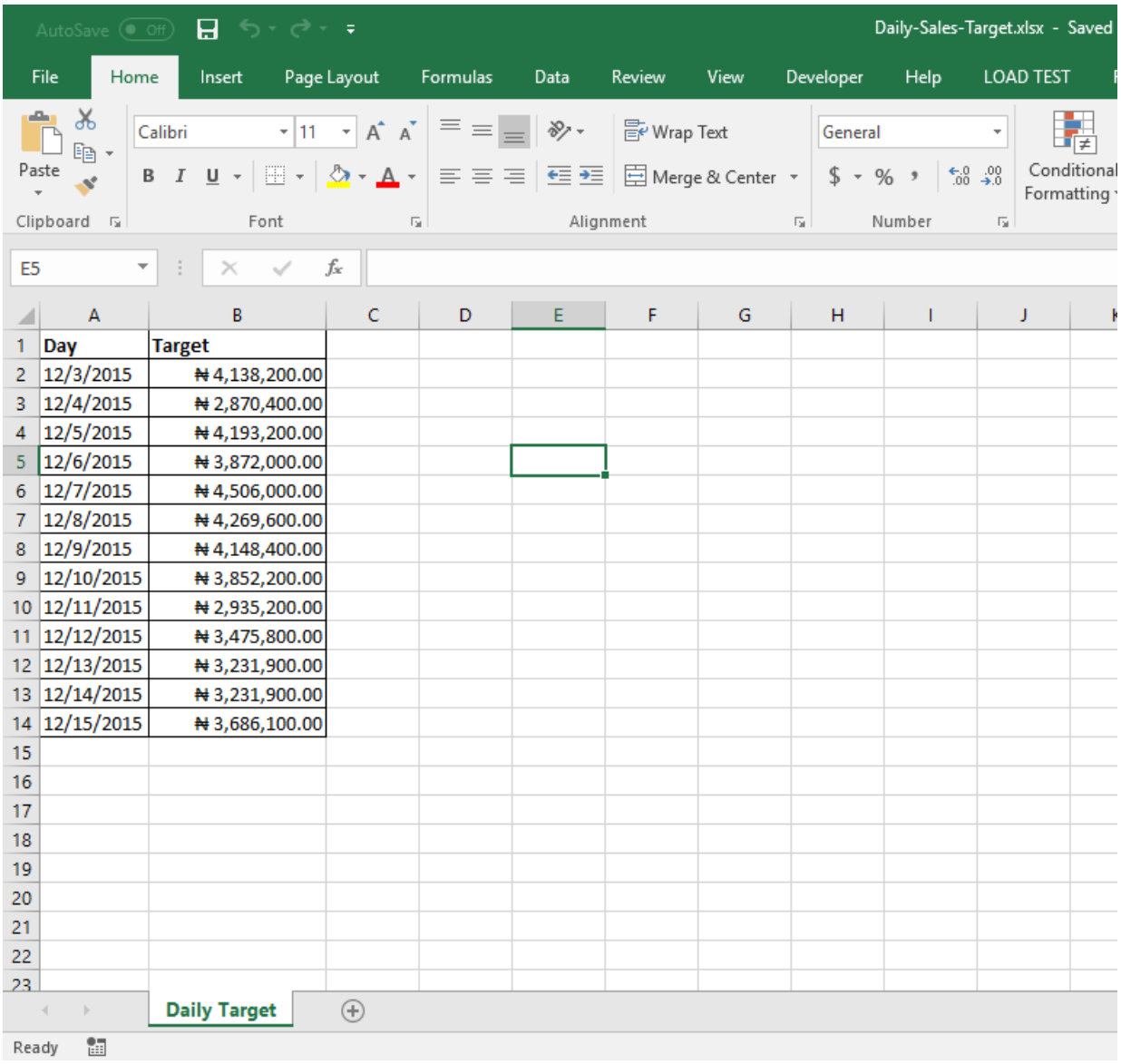
I have the data exported as Excel files. You can download the practice along files at
https://urbizedge.blob.core.windows.net/urbizedge/Branch-Data.xlsx
https://urbizedge.blob.core.windows.net/urbizedge/Daily-Sales-Target.xlsx
https://urbizedge.blob.core.windows.net/urbizedge/Sales-Data.xlsx
https://urbizedge.blob.core.windows.net/urbizedge/Sales-Target.xlsx



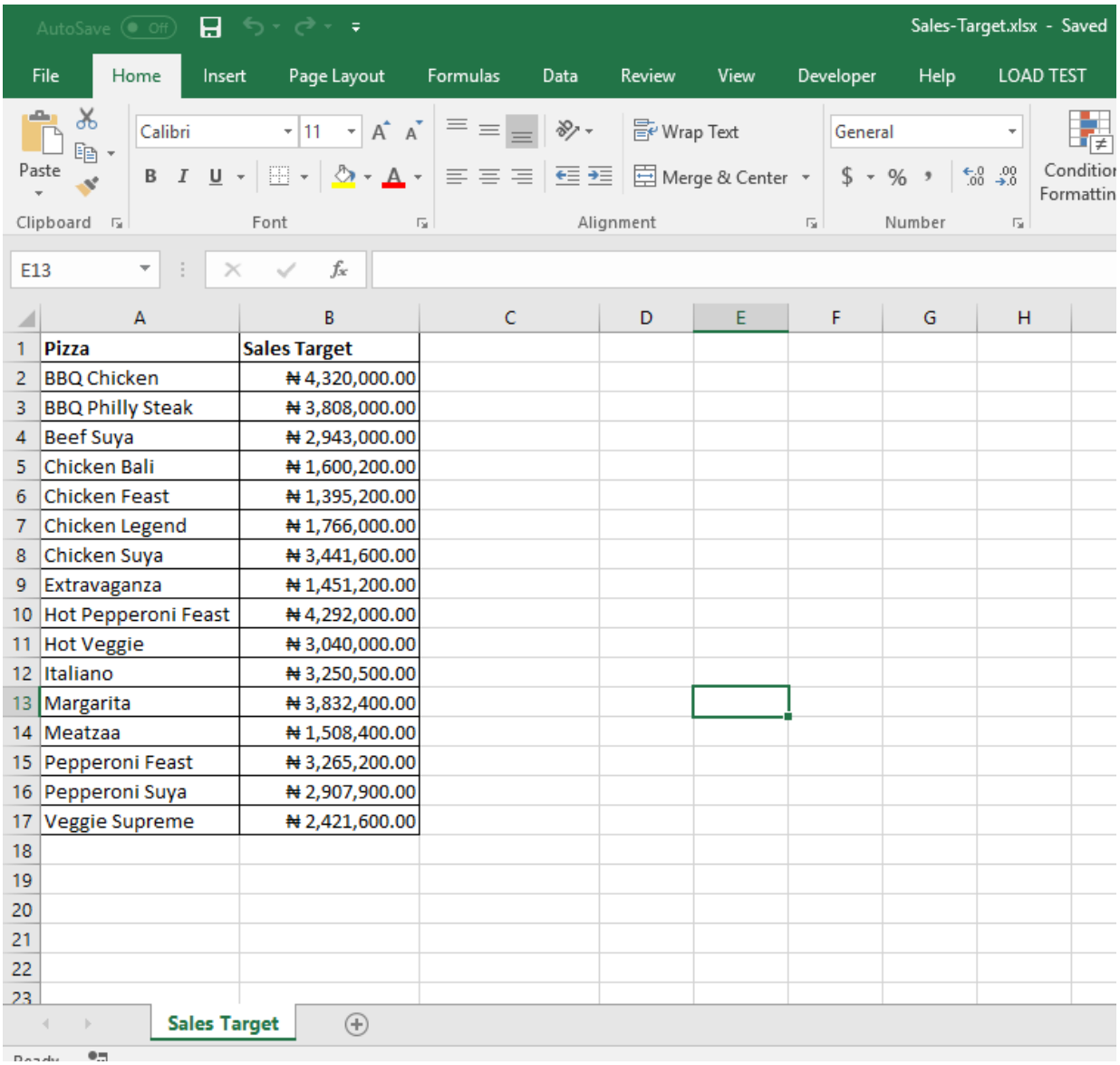
	A	B	C	D	E	F	G	H	I	J
1	**Branch**	**Longitude**	**Lattitude**	**Manager**						
2	Ibadan	3.9167	7.3964	Adamu Sule						
3	Ikoyi	3.4333	6.45	Kasumu Joe						
4	Lekki	4.1167	6.5	Ifeoma Joseph						
5	Gbagada	3.3842473	6.5616377	Michael Slate						
6	Surulere	3.35	6.5	Dupe Ishola						



	A	B	C	D	E	F	G	H	I
1	S/N	Date	Branch	Pizza Sold	Price	Quantity	Time	Time Range	
2	1	12/11/2015	Ibadan	Meatzaa	₦ 2,000.00	5	8:00:01 AM	Before 9:00am	
3	2	12/14/2015	Ikoyi	Extravaganza	₦ 2,000.00	4	8:00:02 AM	Before 9:00am	
4	3	12/4/2015	Lekki	BBQ Chicken	₦ 4,000.00	5	8:00:04 AM	Before 9:00am	
5	4	12/14/2015	Ikoyi	Extravaganza	₦ 2,000.00	1	8:00:07 AM	Before 9:00am	
6	5	12/7/2015	Gbagada	Meatzaa	₦ 2,000.00	4	8:00:08 AM	Before 9:00am	
7	6	12/8/2015	Surulere	Hot Veggie	₦ 4,000.00	2	8:00:14 AM	Before 9:00am	
8	7	12/4/2015	Ibadan	BBQ Philly Steak	₦ 4,000.00	5	8:00:20 AM	Before 9:00am	
9	8	12/7/2015	Ikoyi	Chicken Feast	₦ 2,000.00	1	8:00:20 AM	Before 9:00am	
10	9	12/7/2015	Gbagada	Meatzaa	₦ 2,000.00	3	8:00:22 AM	Before 9:00am	
11	10	12/4/2015	Ibadan	Chicken Suya	₦ 4,000.00	5	8:00:25 AM	Before 9:00am	
12	11	12/12/2015	Lekki	Chicken Legend	₦ 2,000.00	5	8:00:26 AM	Before 9:00am	
13	12	12/9/2015	Gbagada	BBQ Philly Steak	₦ 4,000.00	4	8:00:27 AM	Before 9:00am	
14	13	12/15/2015	Gbagada	Chicken Suya	₦ 4,000.00	2	8:00:29 AM	Before 9:00am	
15	14	12/11/2015	Ibadan	Chicken Feast	₦ 2,000.00	5	8:00:33 AM	Before 9:00am	
16	15	12/5/2015	Surulere	Chicken Feast	₦ 2,000.00	4	8:00:33 AM	Before 9:00am	
17	16	12/7/2015	Lekki	Beef Suya	₦ 3,000.00	5	8:00:34 AM	Before 9:00am	
18	17	12/8/2015	Gbagada	Chicken Feast	₦ 2,000.00	5	8:00:35 AM	Before 9:00am	
19	18	12/14/2015	Lekki	Hot Veggie	₦ 4,000.00	5	8:00:35 AM	Before 9:00am	
20	19	12/11/2015	Surulere	Meatzaa	₦ 2,000.00	5	8:00:35 AM	Before 9:00am	
21	20	12/11/2015	Ibadan	Meatzaa	₦ 2,000.00	2	8:00:36 AM	Before 9:00am	
22	21	12/6/2015	Lekki	Margarita	₦ 4,000.00	3	8:00:37 AM	Before 9:00am	
23	22	12/14/2015	Surulere	Italiano	₦ 3,000.00	5	8:00:40 AM	Before 9:00am	

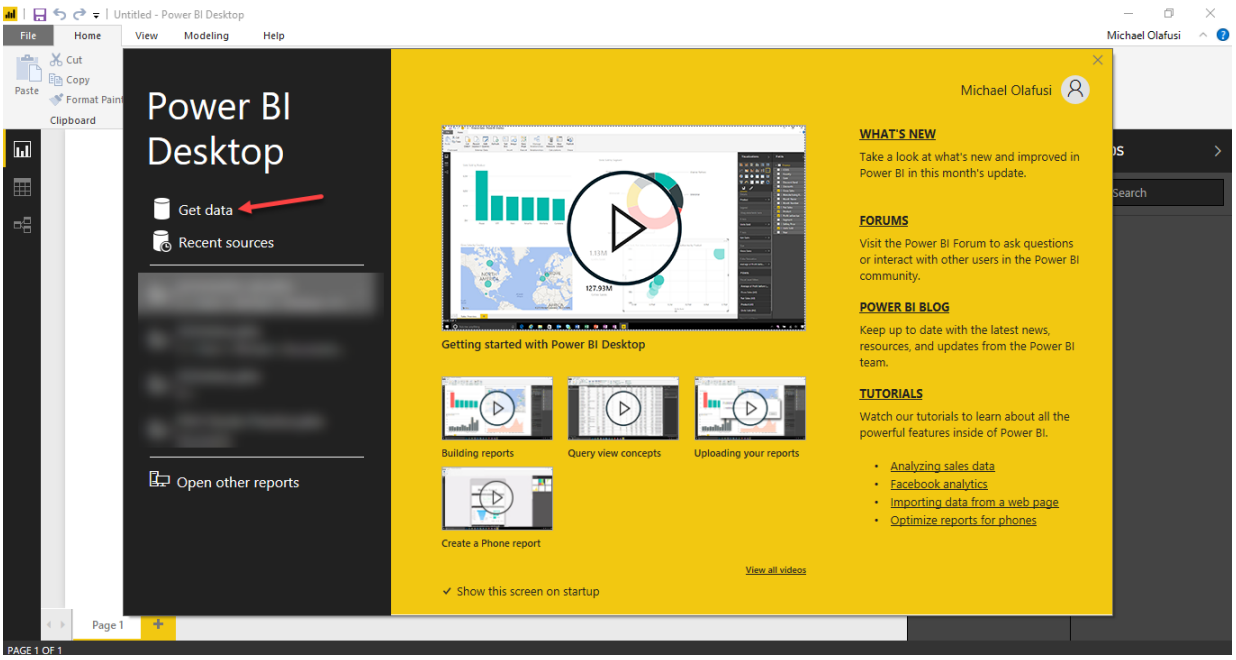


	A	B
1	**Day**	**Target**
2	12/3/2015	₦ 4,138,200.00
3	12/4/2015	₦ 2,870,400.00
4	12/5/2015	₦ 4,193,200.00
5	12/6/2015	₦ 3,872,000.00
6	12/7/2015	₦ 4,506,000.00
7	12/8/2015	₦ 4,269,600.00
8	12/9/2015	₦ 4,148,400.00
9	12/10/2015	₦ 3,852,200.00
10	12/11/2015	₦ 2,935,200.00
11	12/12/2015	₦ 3,475,800.00
12	12/13/2015	₦ 3,231,900.00
13	12/14/2015	₦ 3,231,900.00
14	12/15/2015	₦ 3,686,100.00

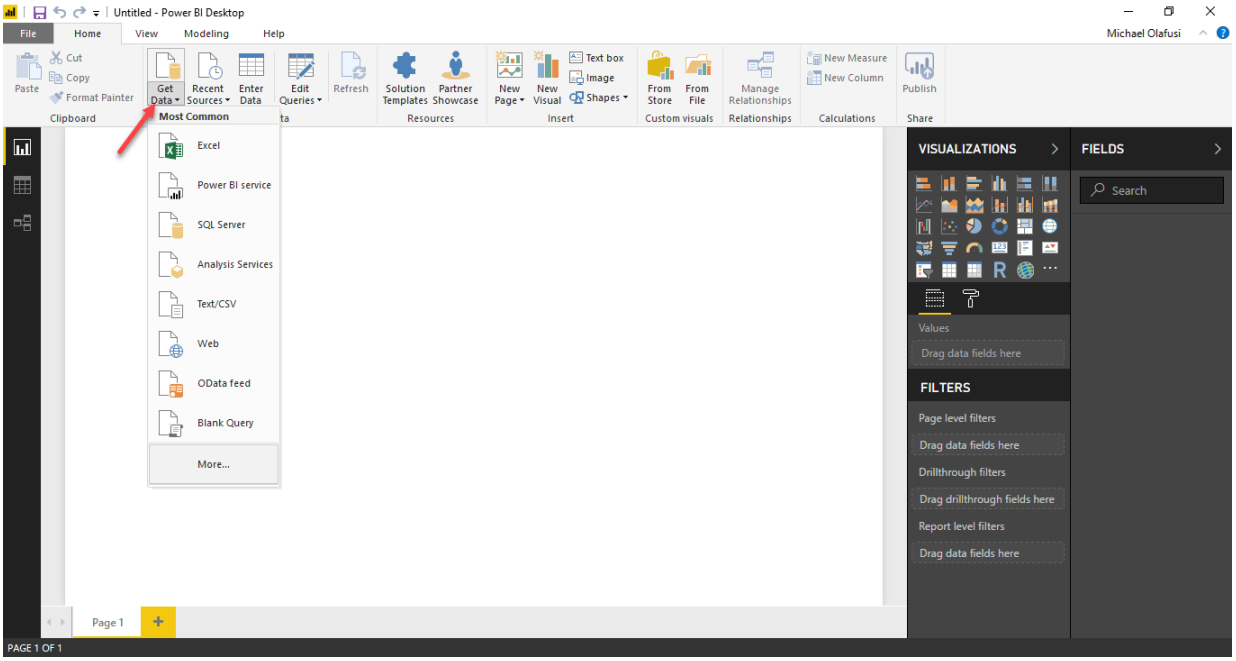


	A	B
1	**Pizza**	**Sales Target**
2	BBQ Chicken	₦ 4,320,000.00
3	BBQ Philly Steak	₦ 3,808,000.00
4	Beef Suya	₦ 2,943,000.00
5	Chicken Bali	₦ 1,600,200.00
6	Chicken Feast	₦ 1,395,200.00
7	Chicken Legend	₦ 1,766,000.00
8	Chicken Suya	₦ 3,441,600.00
9	Extravaganza	₦ 1,451,200.00
10	Hot Pepperoni Feast	₦ 4,292,000.00
11	Hot Veggie	₦ 3,040,000.00
12	Italiano	₦ 3,250,500.00
13	Margarita	₦ 3,832,400.00
14	Meatzaa	₦ 1,508,400.00
15	Pepperoni Feast	₦ 3,265,200.00
16	Pepperoni Suya	₦ 2,907,900.00
17	Veggie Supreme	₦ 2,421,600.00

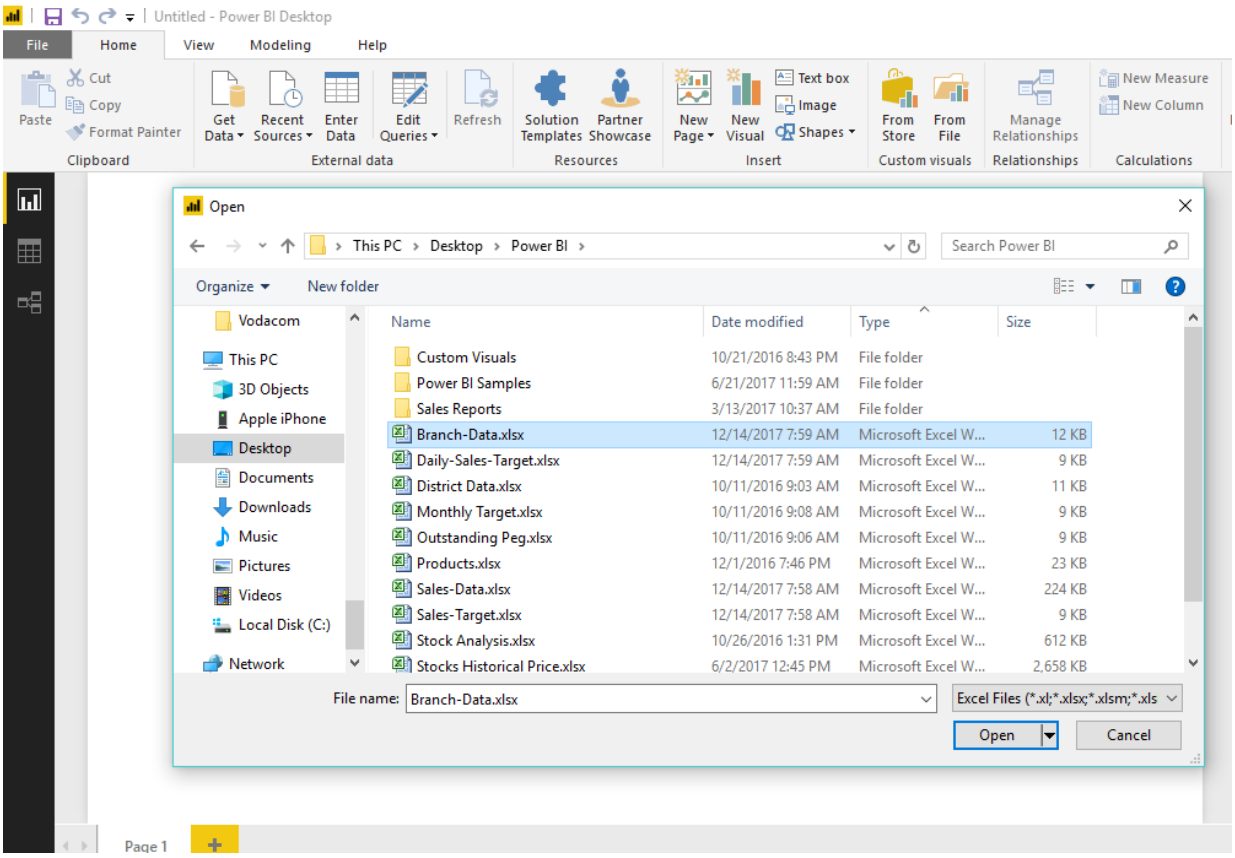
Making sure the Excel files are closed, we are going to use Power BI's Get Data to bring in the data. If you have the startup screen then you can locate the Get Data on the top left.

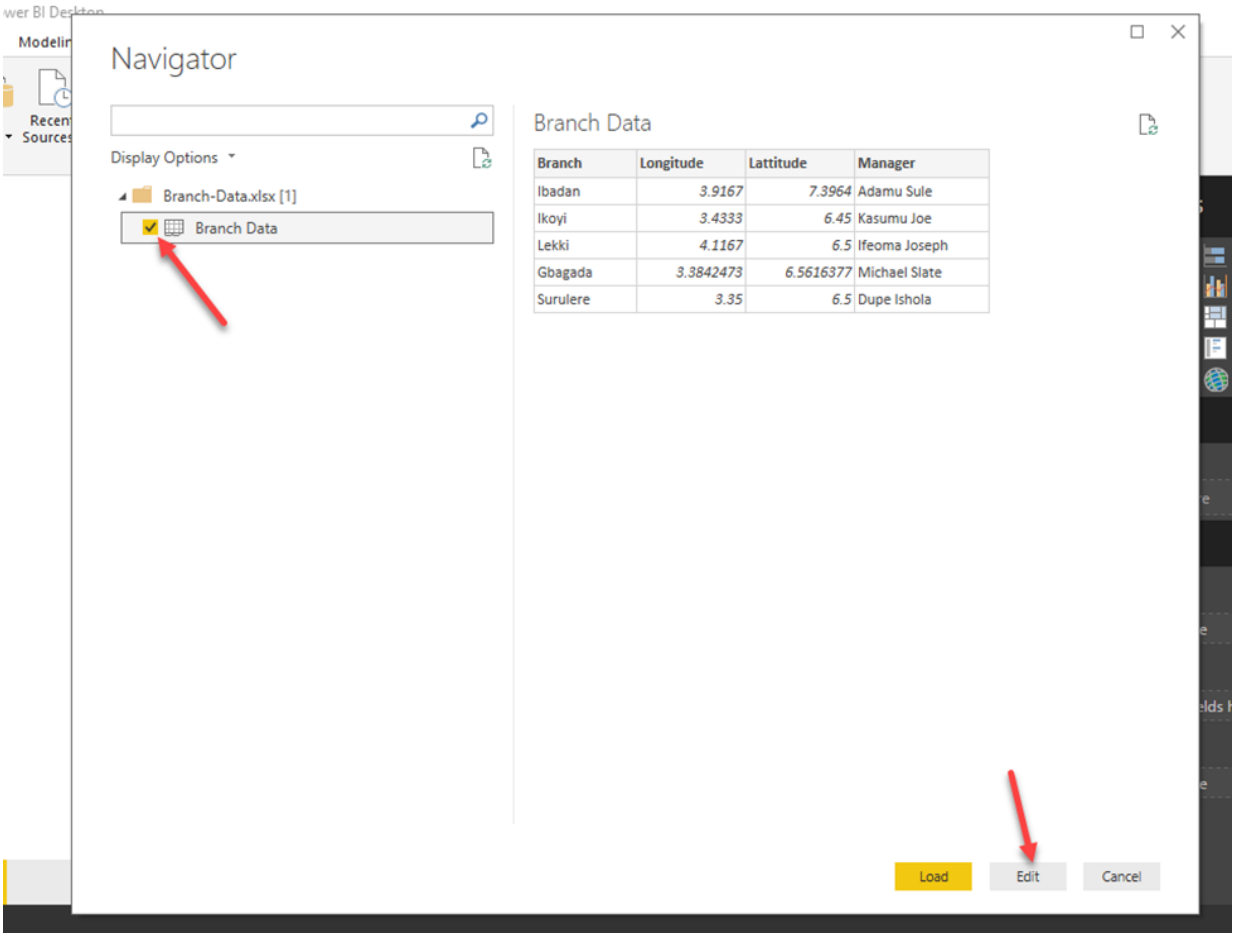

Untitled - Power BI Desktop
File
Home
View
Modeling
Help
Michael Olafusi
Power BI Desktop
Get data
Recent sources
Open other reports
Michael Olafusi
WHAT'S NEW
Take a look at what's new and improved in Power BI in this month's update.
FORUMS
Visit the Power BI Forum to ask questions or interact with other users in the Power BI community.
POWER BI BLOG
Keep up to date with the latest news, resources, and updates from the Power BI team.
TUTORIALS
Watch our tutorials to learn about all the powerful features inside of Power BI.
Analyzing sales data
Facebook analytics
Importing data from a web page
Optimize reports for phones
Getting started with Power BI Desktop
Building reports
Query view concepts
Uploading your reports
Create a Phone report
View all videos
Show this screen on startup
Page 1
PAGE 1 OF 1

But if you are on the main Power BI window, then you will have to access it on the Home menu bar.

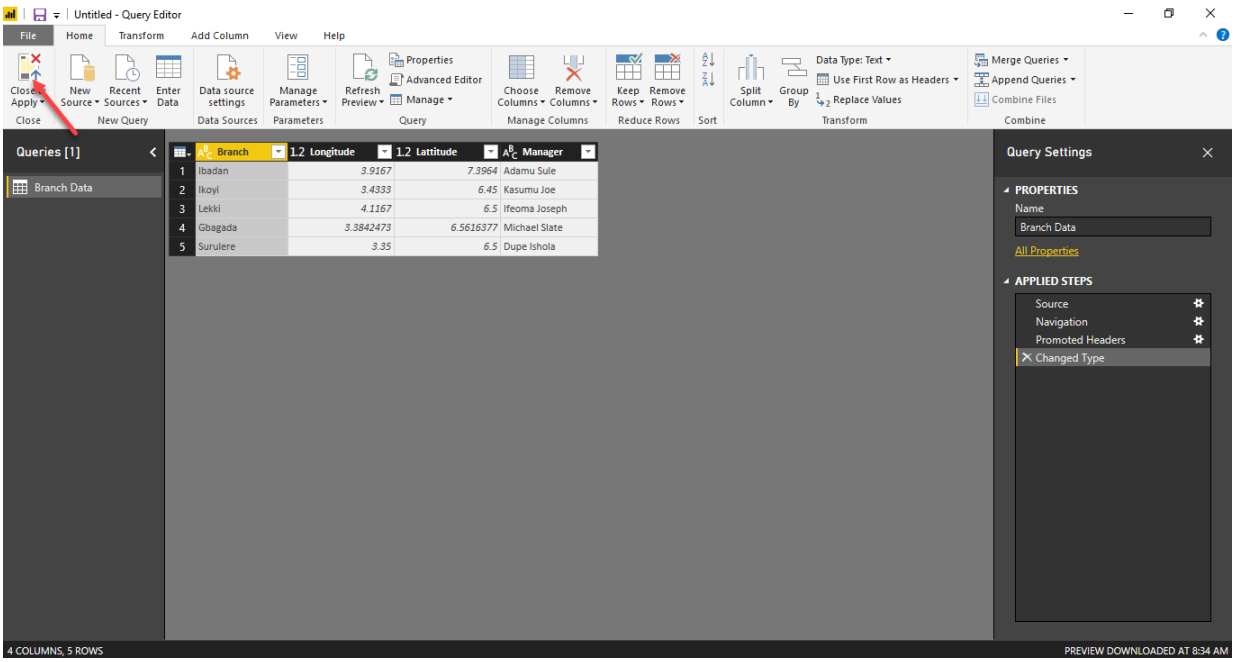


Bring in the data

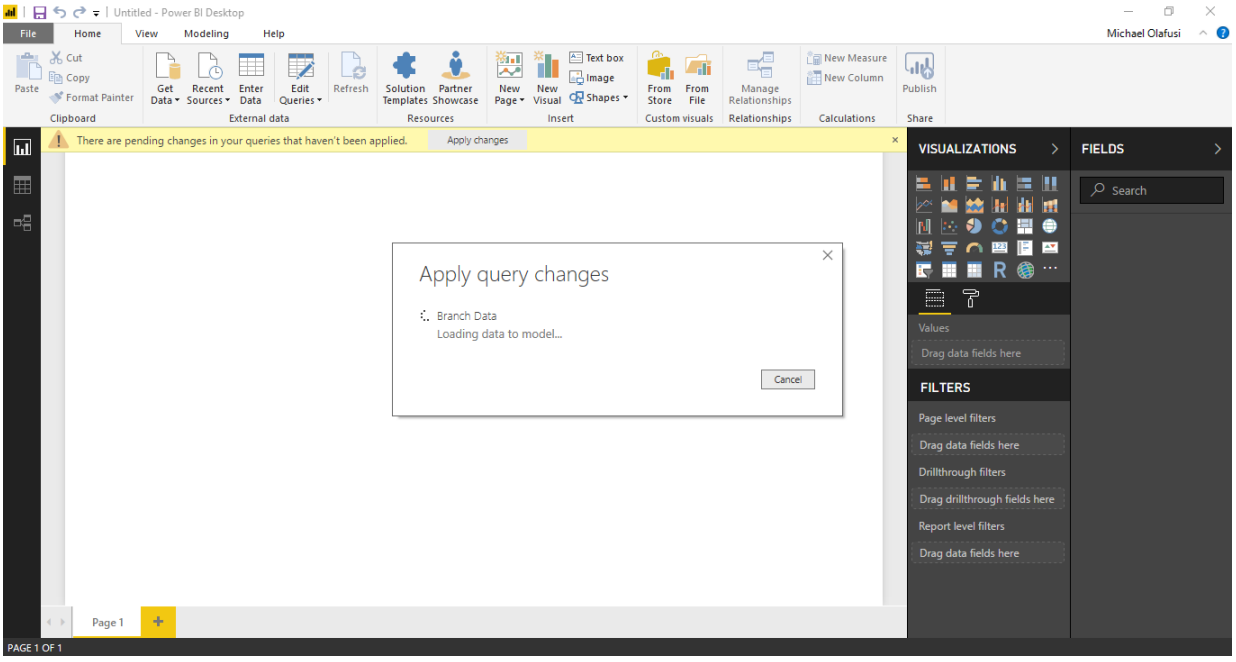

Untitled - Power BI Desktop
File
Home
View
Modeling
Help
Paste
Cut
Copy
Format Painter
Clipboard
Get Data
Recent Sources
Enter Data
Edit Queries
Refresh
External data
Solution Templates
Partner Showcase
Resources
New Page
New Visual
Text box
Image
Shapes
Insert
From Store
From File
Custom visuals
Manage Relationships
Relationships
New Measure
New Column
Calculations
Open
This PC › Desktop › Power BI ›
Search Power BI
Organize
New folder
Vodacom
This PC
3D Objects
Apple iPhone
Desktop
Documents
Downloads
Music
Pictures
Videos
Local Disk (C:)
Network
Name
Date modified
Type
Size
Custom Visuals 10/21/2016 8:43 PM File folder
Power BI Samples 6/21/2017 11:59 AM File folder
Sales Reports 3/13/2017 10:37 AM File folder
Branch-Data.xlsx 12/14/2017 7:59 AM Microsoft Excel W... 12 KB
Daily-Sales-Target.xlsx 12/14/2017 7:59 AM Microsoft Excel W... 9 KB
District Data.xlsx 10/11/2016 9:03 AM Microsoft Excel W... 11 KB
Monthly Target.xlsx 10/11/2016 9:08 AM Microsoft Excel W... 9 KB
Outstanding Peg.xlsx 10/11/2016 9:06 AM Microsoft Excel W... 9 KB
Products.xlsx 12/1/2016 7:46 PM Microsoft Excel W... 23 KB
Sales-Data.xlsx 12/14/2017 7:58 AM Microsoft Excel W... 224 KB
Sales-Target.xlsx 12/14/2017 7:58 AM Microsoft Excel W... 9 KB
Stock Analysis.xlsx 10/26/2016 1:31 PM Microsoft Excel W... 612 KB
Stocks Historical Price.xlsx 6/2/2017 12:45 PM Microsoft Excel W... 2,658 KB
File name: Branch-Data.xlsx
Excel Files (*.xl;*.xlsx;*.xlsm;*.xls
Open
Cancel
Page 1



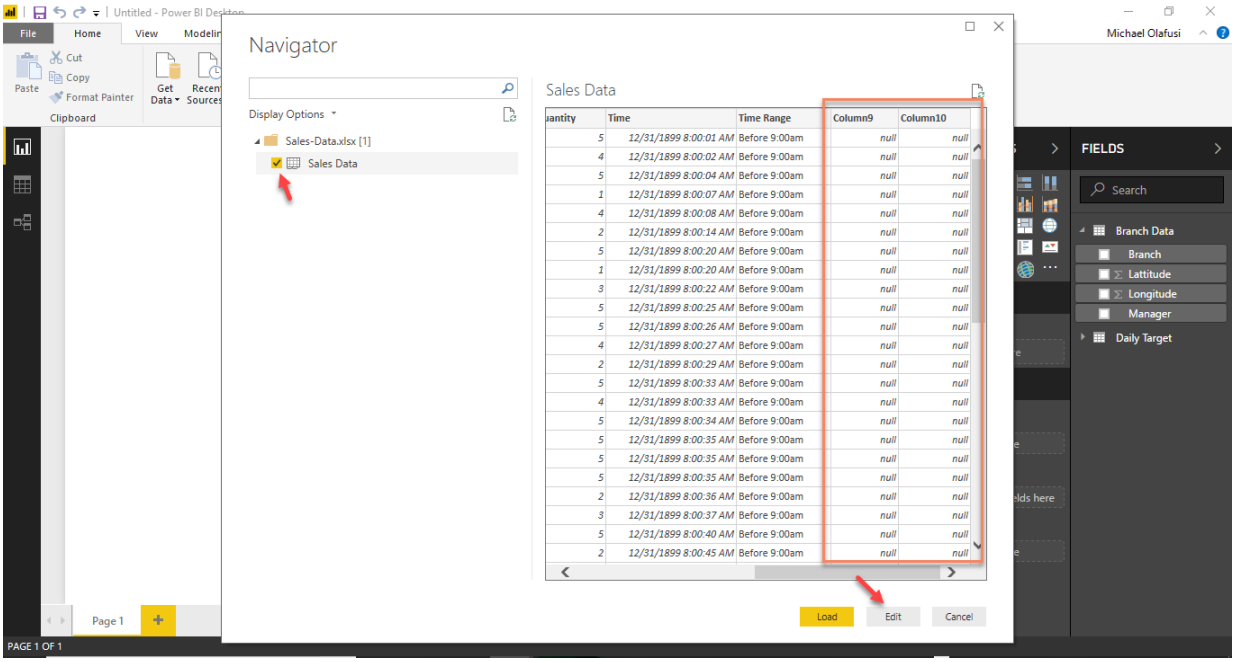
I prefer you make a habit of choosing Edit (when you work a lot more, especially with large live databases, you'll experience the why).



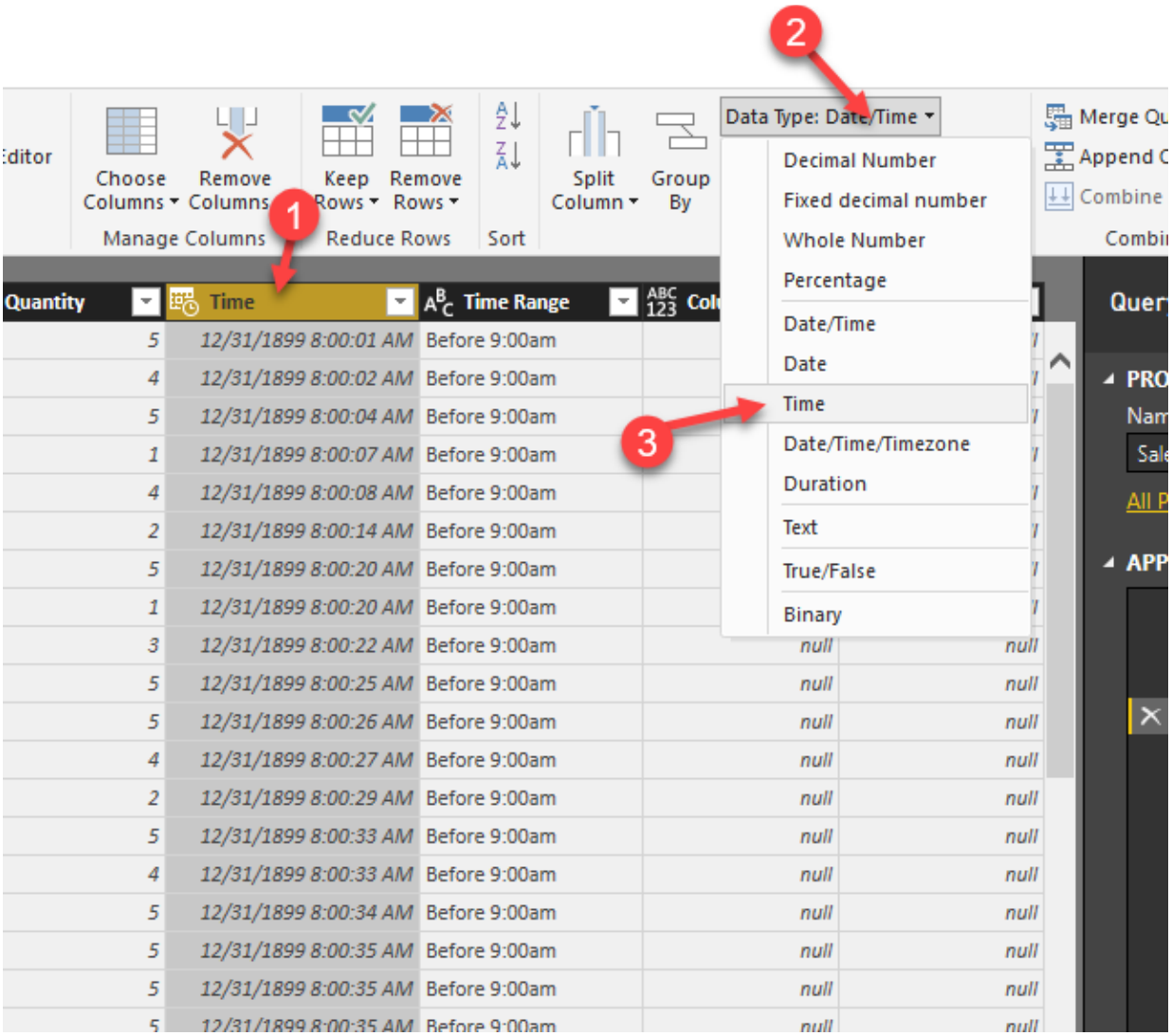
Check if you need to make any changes, like delete an unneeded column or filter out rows you don't need. Then click Close and Apply on the top left corner of the Query Editor.



And you are back in the Data Model (or main Power BI window). Now load in the other data files. Below is the step for the Sales Data.



This is a case where you'll need to get rid of unwanted columns and it's better to do it in the Edit step and also set the Time field to Time data type. It is also good to let you know that you can actually do all this from the main Power BI window, in the Data section.


2
Choose Columns
Remove Columns
Keep Rows
Remove Rows
Split Column
Group By
Data Type: Date/Time
Merge Qu
Append C
Combine
Manage Columns
Reduce Rows
Sort
Decimal Number
Fixed decimal number
Whole Number
Percentage
Date/Time
Date
Time
Date/Time/Timezone
Duration
Text
True/False
Binary
1
3
Quantity
Time
Time Range
5 12/31/1899 8:00:01 AM Before 9:00am
4 12/31/1899 8:00:02 AM Before 9:00am
5 12/31/1899 8:00:04 AM Before 9:00am
1 12/31/1899 8:00:07 AM Before 9:00am
4 12/31/1899 8:00:08 AM Before 9:00am
2 12/31/1899 8:00:14 AM Before 9:00am
5 12/31/1899 8:00:20 AM Before 9:00am
1 12/31/1899 8:00:20 AM Before 9:00am
3 12/31/1899 8:00:22 AM Before 9:00am
5 12/31/1899 8:00:25 AM Before 9:00am
5 12/31/1899 8:00:26 AM Before 9:00am
4 12/31/1899 8:00:27 AM Before 9:00am
2 12/31/1899 8:00:29 AM Before 9:00am
5 12/31/1899 8:00:33 AM Before 9:00am
4 12/31/1899 8:00:33 AM Before 9:00am
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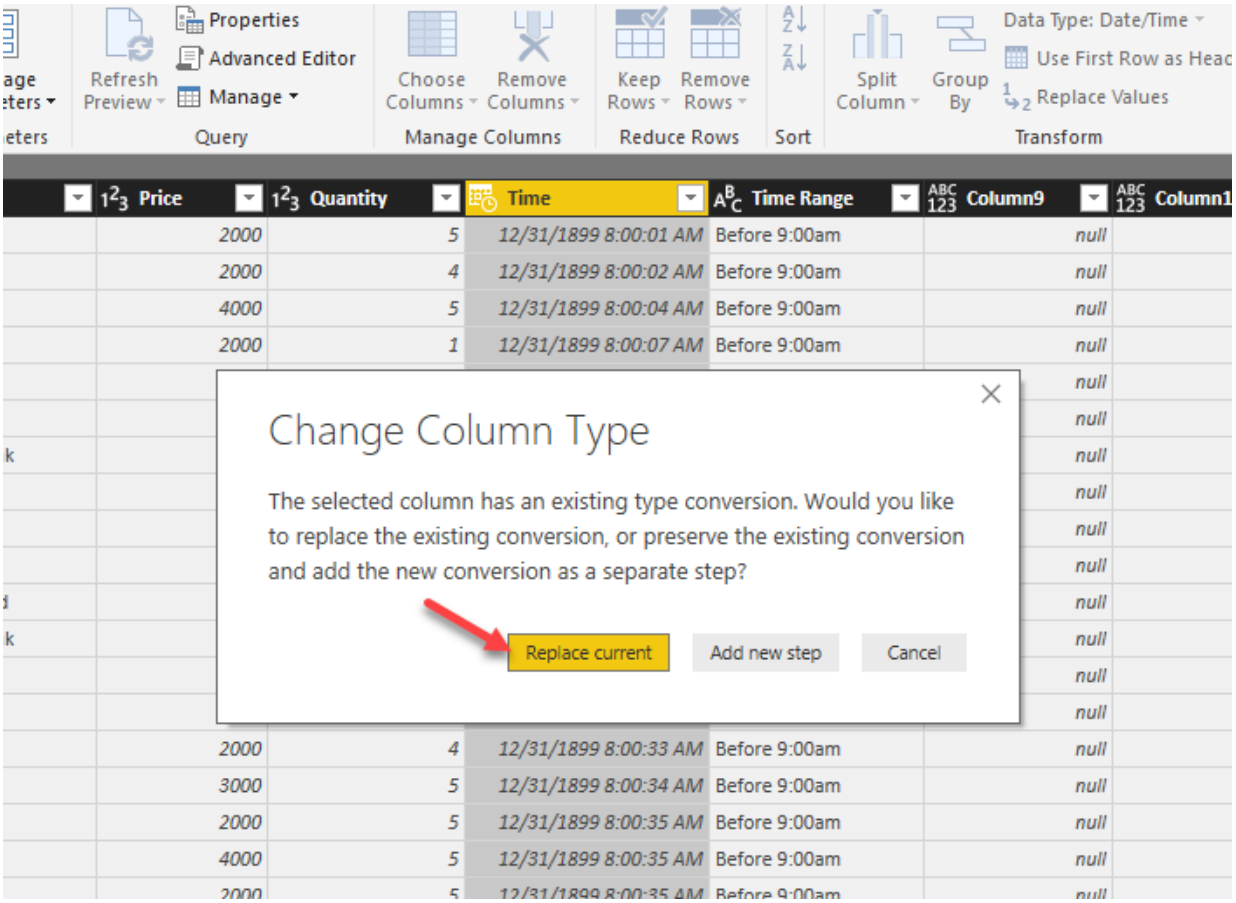
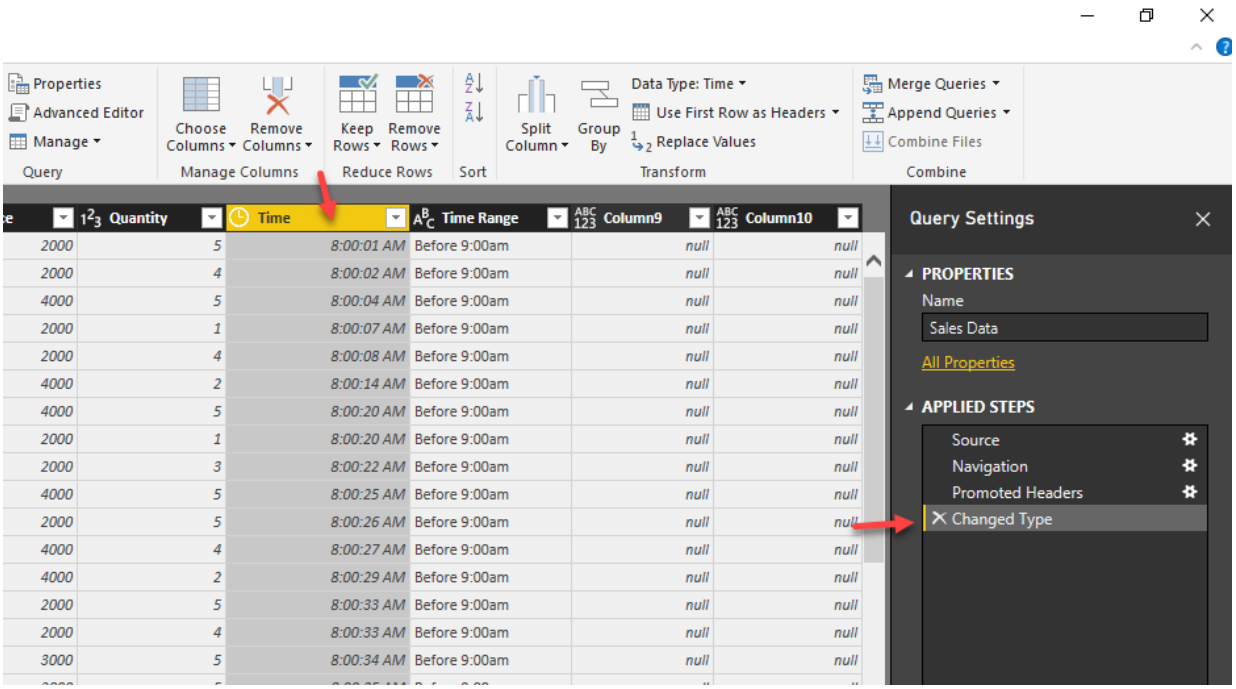
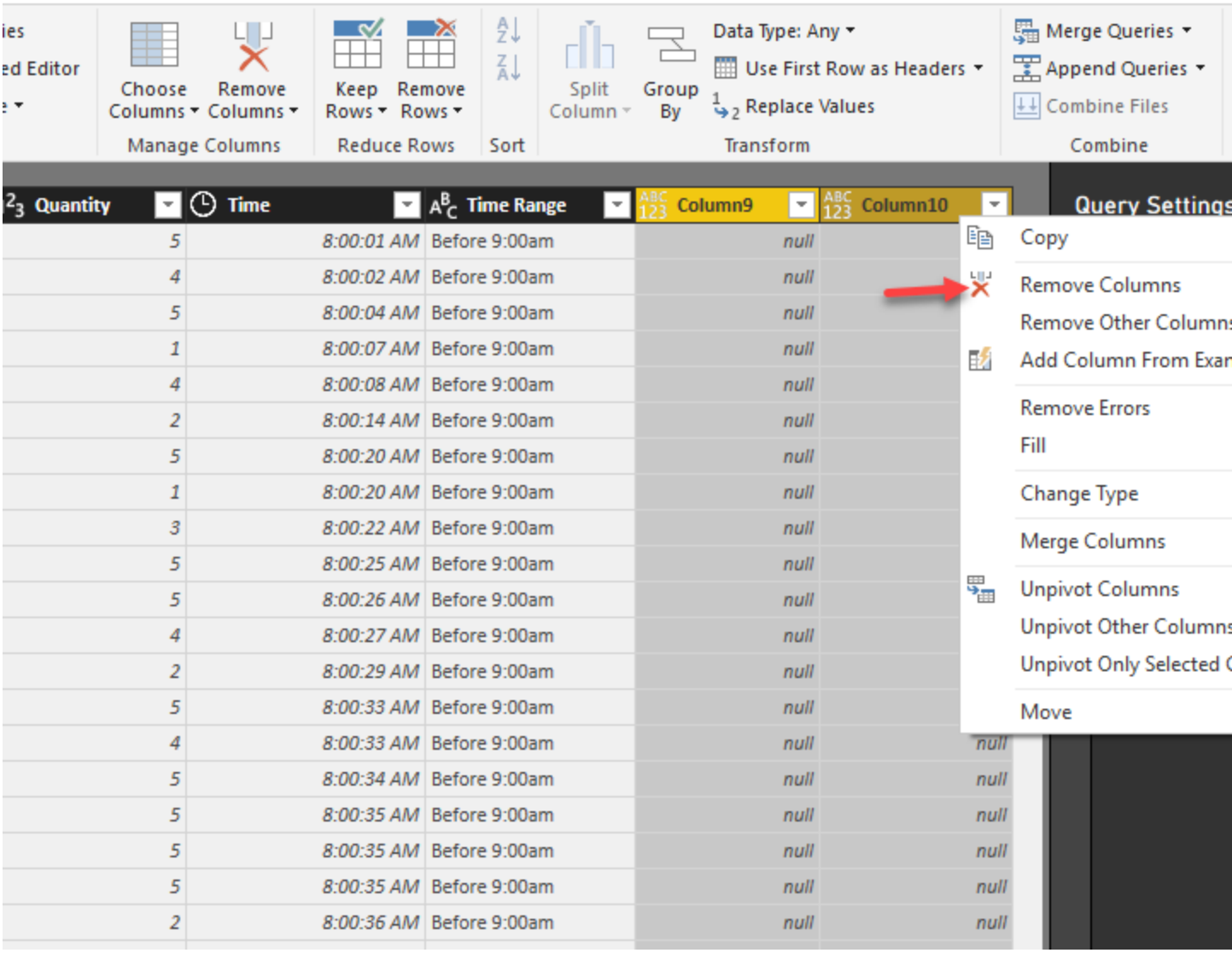
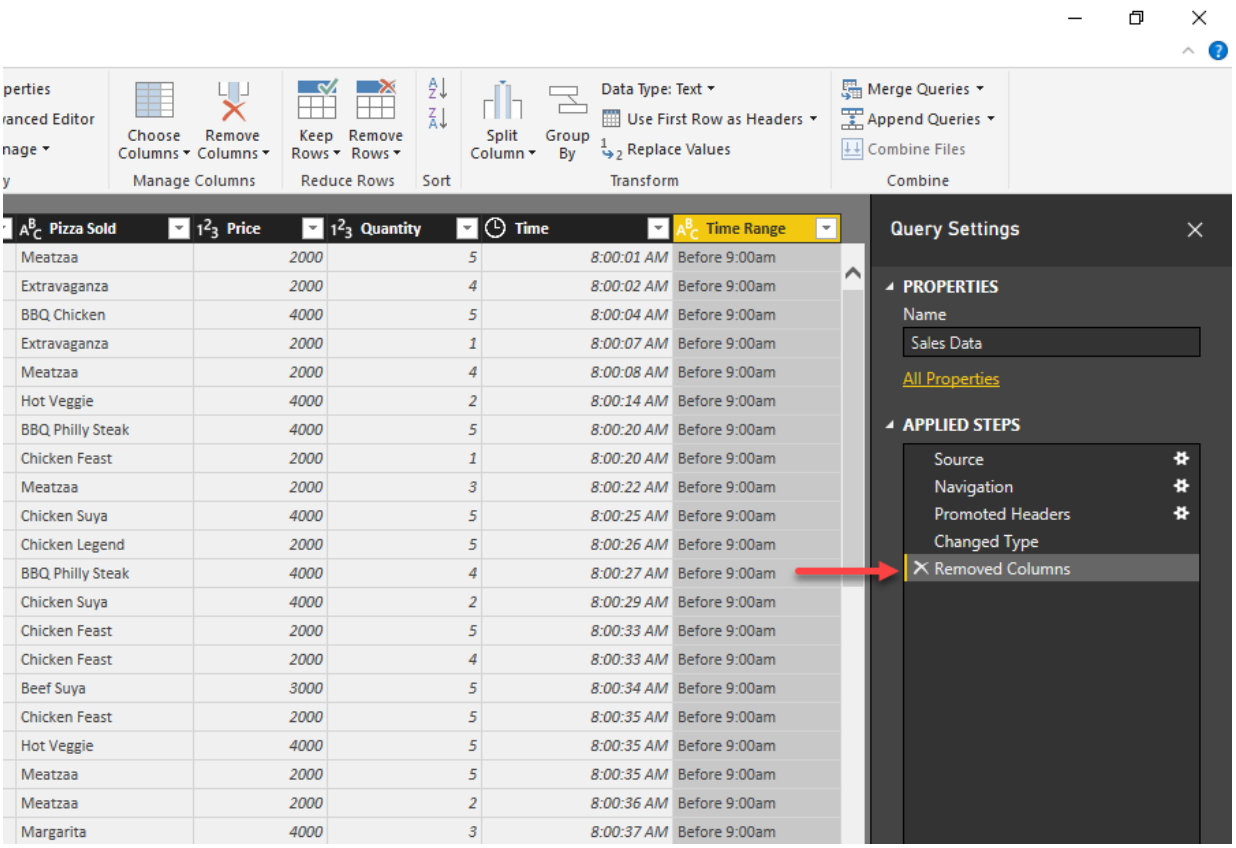

Properties
Advanced Editor
Manage
Refresh Preview
Query
Choose Columns
Remove Columns
Manage Columns
Keep Rows
Remove Rows
Reduce Rows
Sort
Split Column
Group By
Data Type: Date/Time
Use First Row as Heac
Replace Values
Transform
Price
Quantity
Time
Time Range
Column9
Column1
2000 5 12/31/1899 8:00:01 AM Before 9:00am null
2000 4 12/31/1899 8:00:02 AM Before 9:00am null
4000 5 12/31/1899 8:00:04 AM Before 9:00am null
2000 1 12/31/1899 8:00:07 AM Before 9:00am null
Change Column Type
The selected column has an existing type conversion. Would you like to replace the existing conversion, or preserve the existing conversion and add the new conversion as a separate step?
Replace current
Add new step
Cancel
2000 4 12/31/1899 8:00:33 AM Before 9:00am null
3000 5 12/31/1899 8:00:34 AM Before 9:00am null
2000 5 12/31/1899 8:00:35 AM Before 9:00am null
4000 5 12/31/1899 8:00:35 AM Before 9:00am null


Properties
Advanced Editor
Manage
Query
Choose Columns
Remove Columns
Manage Columns
Keep Rows
Remove Rows
Reduce Rows
Sort
Split Column
Group By
Data Type: Time
Use First Row as Headers
Replace Values
Transform
Merge Queries
Append Queries
Combine Files
Combine
Quantity
Time
Time Range
Column9
Column10
2000 5 8:00:01 AM Before 9:00am null null
2000 4 8:00:02 AM Before 9:00am null null
4000 5 8:00:04 AM Before 9:00am null null
2000 1 8:00:07 AM Before 9:00am null null
2000 4 8:00:08 AM Before 9:00am null null
4000 2 8:00:14 AM Before 9:00am null null
4000 5 8:00:20 AM Before 9:00am null null
2000 1 8:00:20 AM Before 9:00am null null
2000 3 8:00:22 AM Before 9:00am null null
4000 5 8:00:25 AM Before 9:00am null null
2000 5 8:00:26 AM Before 9:00am null null
4000 4 8:00:27 AM Before 9:00am null null
4000 2 8:00:29 AM Before 9:00am null null
2000 5 8:00:33 AM Before 9:00am null null
2000 4 8:00:33 AM Before 9:00am null null
3000 5 8:00:34 AM Before 9:00am null null
Query Settings
PROPERTIES
Name
Sales Data
All Properties
APPLIED STEPS
Source
Navigation
Promoted Headers
Changed Type

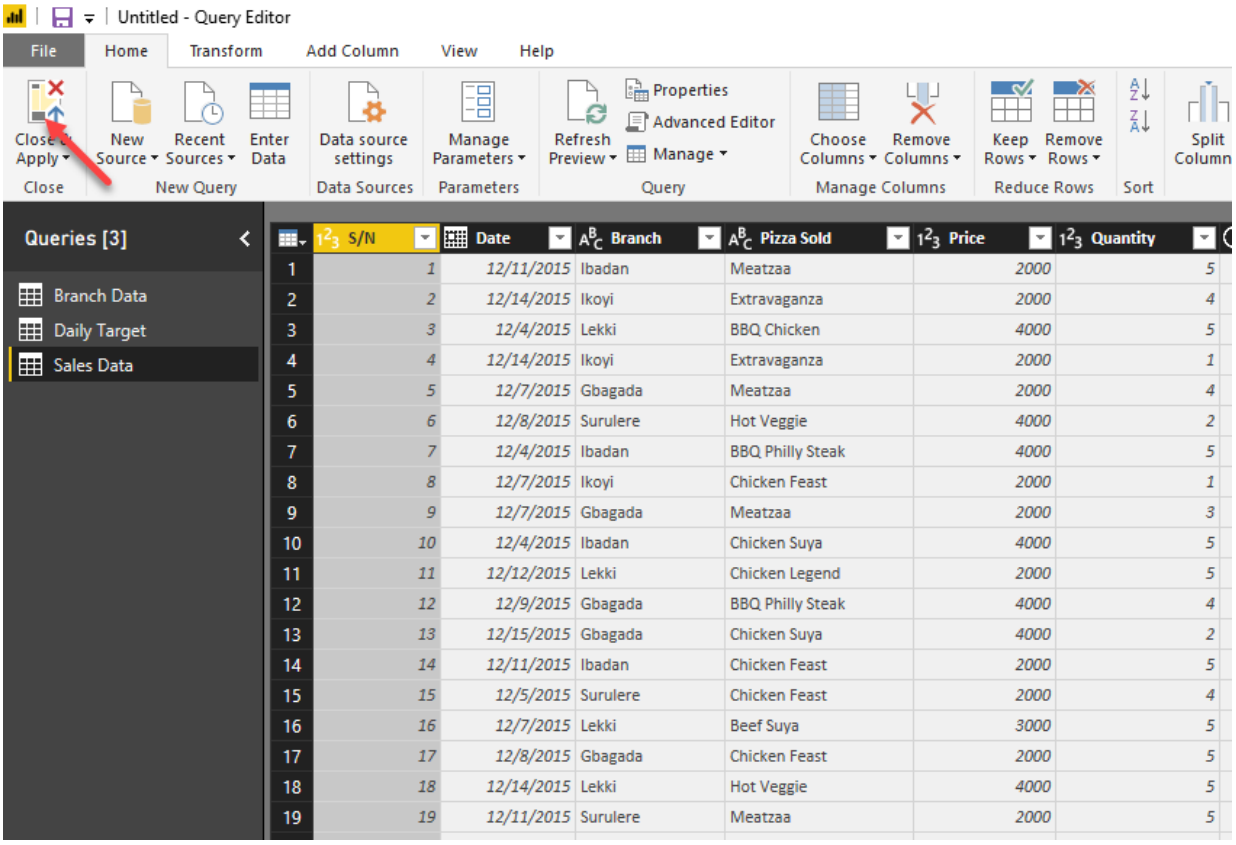

Choose Columns
Remove Columns
Keep Rows
Remove Rows
Split Column
Group By
Data Type: Any
Use First Row as Headers
Replace Values
Merge Queries
Append Queries
Combine Files
Manage Columns
Reduce Rows
Sort
Transform
Combine
Quantity
Time
Time Range
Column9
Column10
Query Settings
Copy
Remove Columns
Remove Other Columns
Add Column From Exar
Remove Errors
Fill
Change Type
Merge Columns
Unpivot Columns
Unpivot Other Columns
Unpivot Only Selected
Move



Pizza Sold	Price	Quantity	Time	Time Range
Meatzaa	2000	5	8:00:01 AM	Before 9:00am
Extravaganza	2000	4	8:00:02 AM	Before 9:00am
BBQ Chicken	4000	5	8:00:04 AM	Before 9:00am
Extravaganza	2000	1	8:00:07 AM	Before 9:00am
Meatzaa	2000	4	8:00:08 AM	Before 9:00am
Hot Veggie	4000	2	8:00:14 AM	Before 9:00am
BBQ Philly Steak	4000	5	8:00:20 AM	Before 9:00am
Chicken Feast	2000	1	8:00:20 AM	Before 9:00am
Meatzaa	2000	3	8:00:22 AM	Before 9:00am
Chicken Suya	4000	5	8:00:25 AM	Before 9:00am
Chicken Legend	2000	5	8:00:26 AM	Before 9:00am
BBQ Philly Steak	4000	4	8:00:27 AM	Before 9:00am
Chicken Suya	4000	2	8:00:29 AM	Before 9:00am
Chicken Feast	2000	5	8:00:33 AM	Before 9:00am
Chicken Feast	2000	4	8:00:33 AM	Before 9:00am
Beef Suya	3000	5	8:00:34 AM	Before 9:00am
Chicken Feast	2000	5	8:00:35 AM	Before 9:00am
Hot Veggie	4000	5	8:00:35 AM	Before 9:00am
Meatzaa	2000	5	8:00:35 AM	Before 9:00am
Meatzaa	2000	2	8:00:36 AM	Before 9:00am
Margarita	4000	3	8:00:37 AM	Before 9:00am

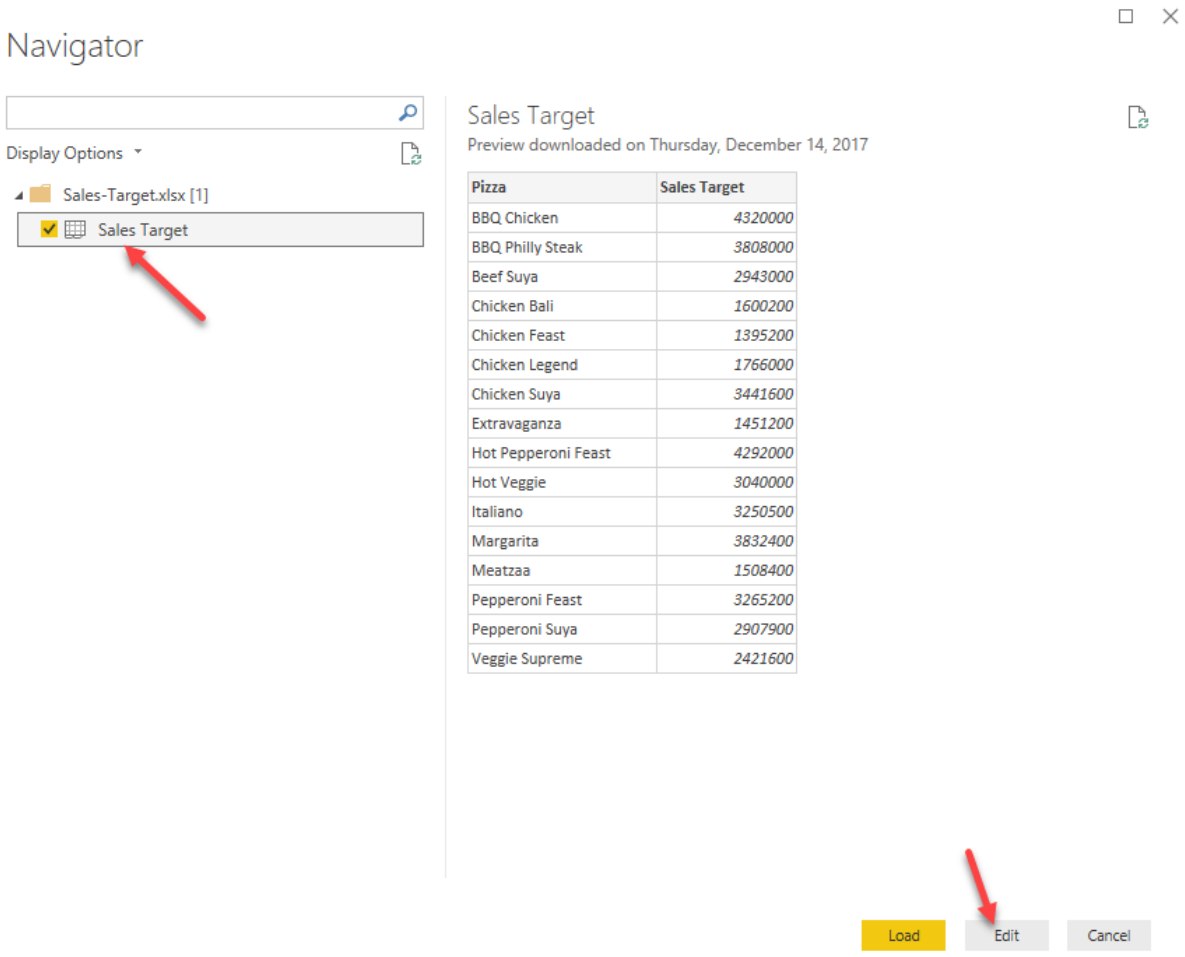
You will notice an audit trail of your steps on the right.

Don’t forget to do the Close and Apply.



	S/N	Date	Branch	Pizza Sold	Price	Quantity
1	1	12/11/2015	Ibadan	Meatzaa	2000	5
2	2	12/14/2015	Ikoyi	Extravaganza	2000	4
3	3	12/4/2015	Lekki	BBQ Chicken	4000	5
4	4	12/14/2015	Ikoyi	Extravaganza	2000	1
5	5	12/7/2015	Gbagada	Meatzaa	2000	4
6	6	12/8/2015	Surulere	Hot Veggie	4000	2
7	7	12/4/2015	Ibadan	BBQ Philly Steak	4000	5
8	8	12/7/2015	Ikoyi	Chicken Feast	2000	1
9	9	12/7/2015	Gbagada	Meatzaa	2000	3
10	10	12/4/2015	Ibadan	Chicken Suya	4000	5
11	11	12/12/2015	Lekki	Chicken Legend	2000	5
12	12	12/9/2015	Gbagada	BBQ Philly Steak	4000	4
13	13	12/15/2015	Gbagada	Chicken Suya	4000	2
14	14	12/11/2015	Ibadan	Chicken Feast	2000	5
15	15	12/5/2015	Surulere	Chicken Feast	2000	4
16	16	12/7/2015	Lekki	Beef Suya	3000	5
17	17	12/8/2015	Gbagada	Chicken Feast	2000	5
18	18	12/14/2015	Lekki	Hot Veggie	4000	5
19	19	12/11/2015	Surulere	Meatzaa	2000	5

Bring in the Sales Target and Daily target files too.

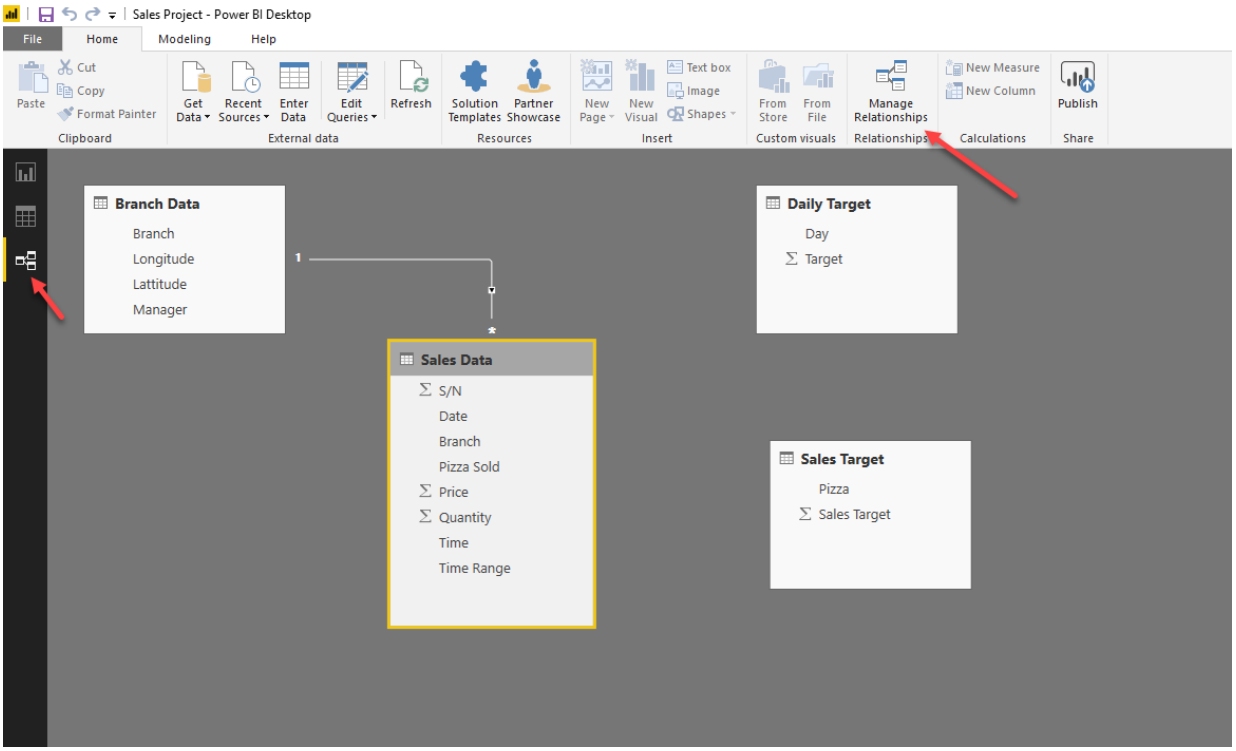


Pizza	Sales Target
BBQ Chicken	4320000
BBQ Philly Steak	3808000
Beef Suya	2943000
Chicken Bali	1600200
Chicken Feast	1395200
Chicken Legend	1766000
Chicken Suya	3441600
Extravaganza	1451200
Hot Pepperoni Feast	4292000
Hot Veggie	3040000
Italiano	3250500
Margarita	3832400
Meatzaa	1508400
Pepperoni Feast	3265200
Pepperoni Suya	2907900
Veggie Supreme	2421600

After bringing in the data, you need to create relationships between the tables. That way you can create interactive reports with charts that responds to clicks on other charts. You wouldn't also have to do a VLOOKUP (Excel formula for relating different tables) in order to use fields from different tables in the same chart.

Power BI is quite smart and tries to infer relationships between the tables you have based on the field names and the data types. It always does single direction relationships and either create too many or too few relationships. You have to get familiar with creating relationships from scratch and editing the ones it created for you.

You can click on Manage Relationships to edit and create new relationships. Single direction means you can go in one direction only. This is usually the recommended choice; it helps prevent ambiguity in the relationships and enforces good modeling practice. You need to remember that the direction is always from the one-side to the many side for one-to-many relationships, and control (or implicit filtering) only flows in the direction of the arrow.


Sales Project - Power BI Desktop
File
Home
Modeling
Help
Paste
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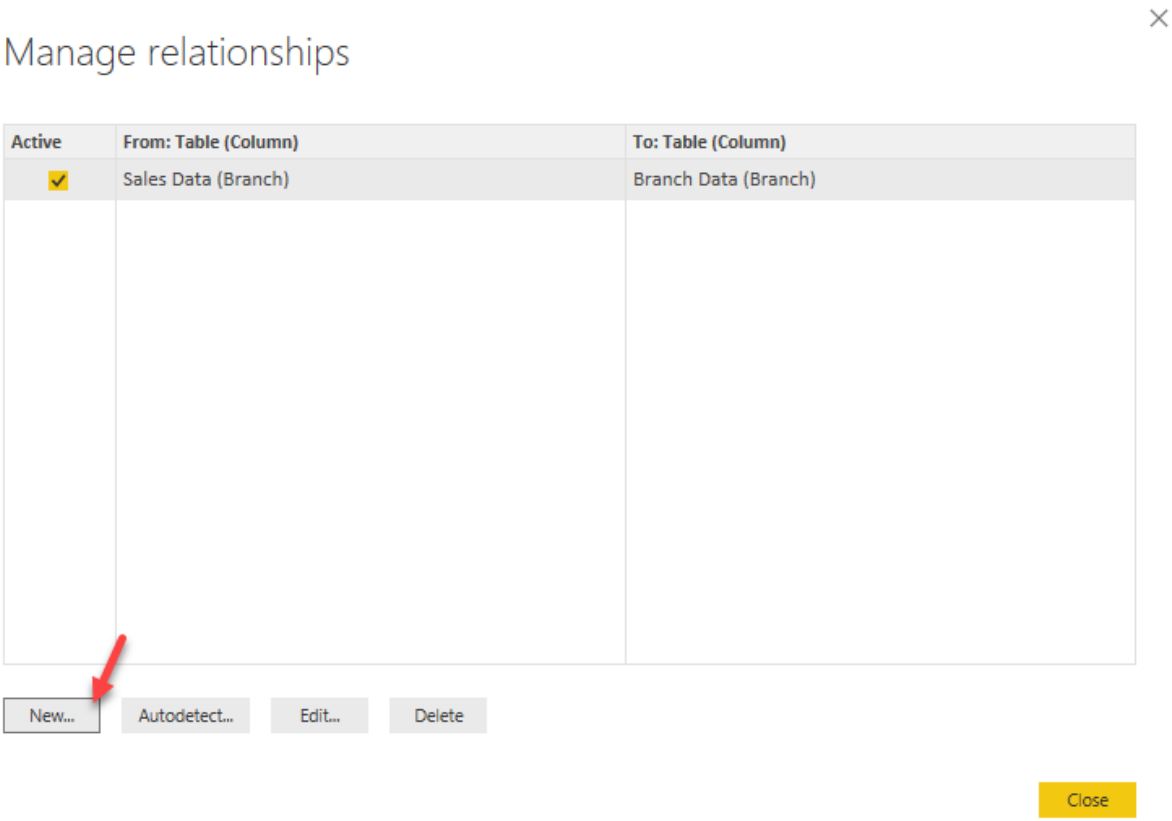
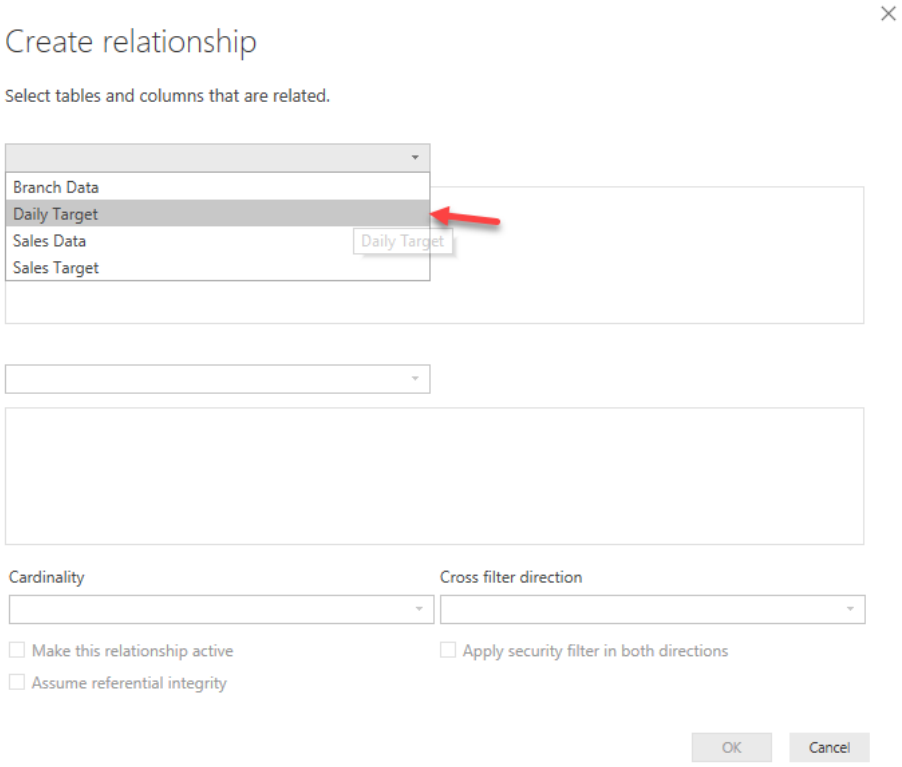
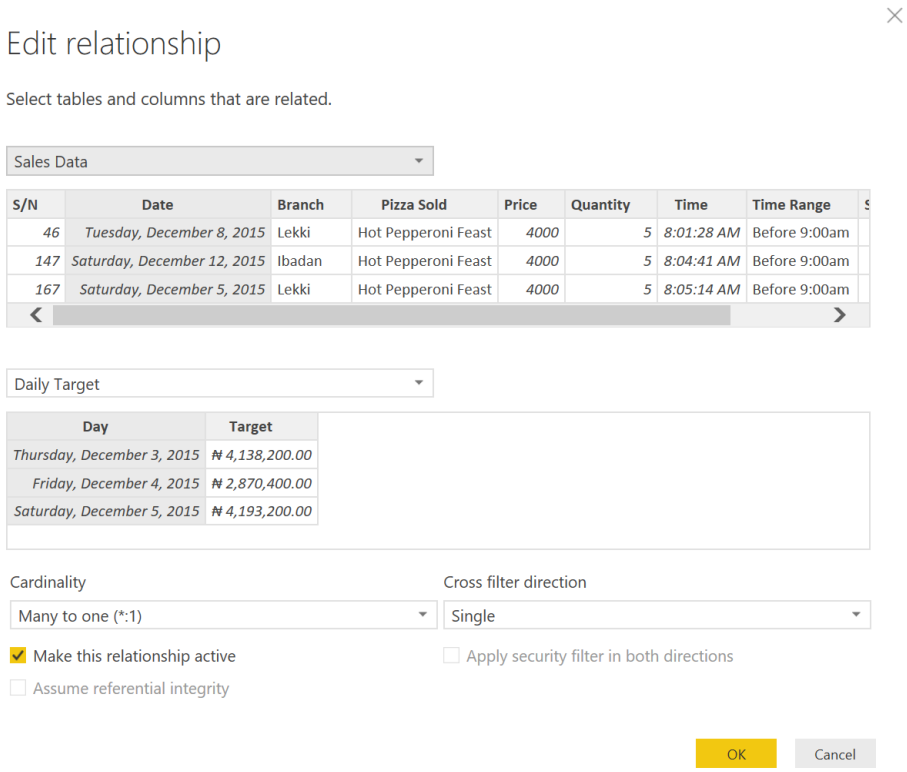
Format Painter
Clipboard
Get Data
Recent Sources
Enter Data
Edit Queries
Refresh
External data
Solution Templates
Partner Showcase
Resources
New Page
New Visual
Text box
Image
Shapes
Insert
From Store
From File
Custom visuals
Manage Relationships
Relationships
New Measure
New Column
Calculations
Publish
Share
Branch Data
Branch
Longitude
Lattitude
Manager
1
*
Sales Data
S/N
Date
Branch
Pizza Sold
Price
Quantity
Time
Time Range
Daily Target
Day
Target
Sales Target
Pizza
Sales Target

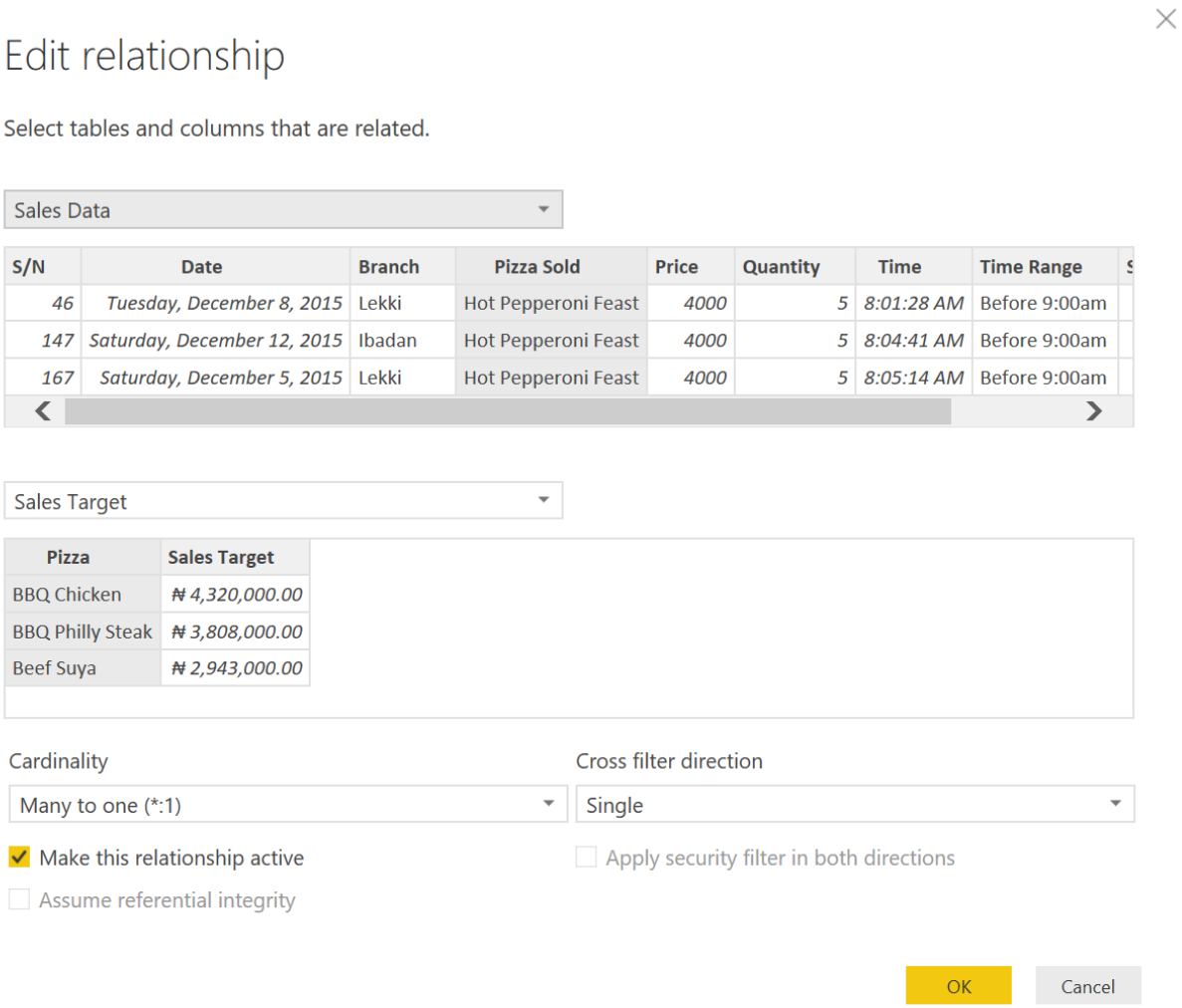

Manage relationships
Active
From: Table (Column)
To: Table (Column)
Sales Data (Branch)
Branch Data (Branch)
New...
Autodetect...
Edit...
Delete
Close

We'll create relationships between the other tables. Daily Target to Sales Data.

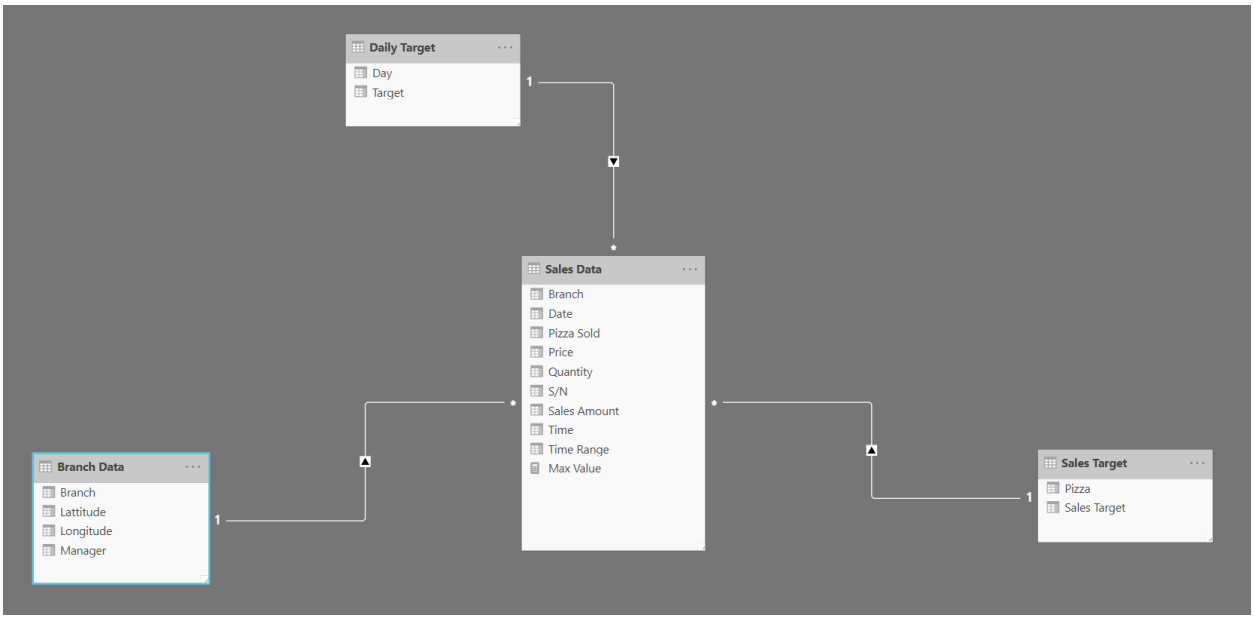



Edit relationship
Select tables and columns that are related.
Sales Data
S/N Date Branch Pizza Sold Price Quantity Time Time Range
46 Tuesday, December 8, 2015 Lekki Hot Pepperoni Feast 4000 5 8:01:28 AM Before 9:00am
147 Saturday, December 12, 2015 Ibadan Hot Pepperoni Feast 4000 5 8:04:41 AM Before 9:00am
167 Saturday, December 5, 2015 Lekki Hot Pepperoni Feast 4000 5 8:05:14 AM Before 9:00am
Daily Target
Day Target
Thursday, December 3, 2015 ₦4,138,200.00
Friday, December 4, 2015 ₦2,870,400.00
Saturday, December 5, 2015 ₦4,193,200.00
Cardinality
Cross filter direction
Many to one (*:1)
Single
Make this relationship active
Apply security filter in both directions
Assume referential integrity
OK
Cancel

And Sales Target to Sales Data

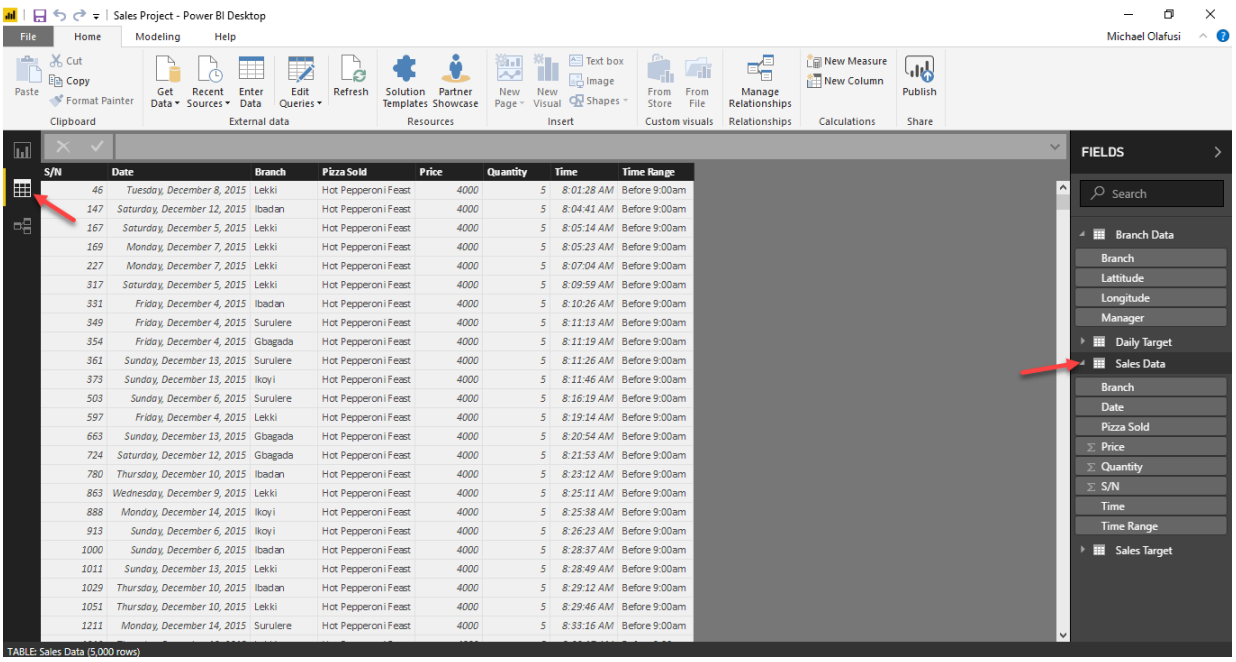

Edit relationship
Select tables and columns that are related.
Sales Data
S/N | Date | Branch | Pizza Sold | Price | Quantity | Time | Time Range
46 | Tuesday, December 8, 2015 | Lekki | Hot Pepperoni Feast | 4000 | 5 | 8:01:28 AM | Before 9:00am
147 | Saturday, December 12, 2015 | Ibadan | Hot Pepperoni Feast | 4000 | 5 | 8:04:41 AM | Before 9:00am
167 | Saturday, December 5, 2015 | Lekki | Hot Pepperoni Feast | 4000 | 5 | 8:05:14 AM | Before 9:00am
Sales Target
Pizza | Sales Target
BBQ Chicken | ₦ 4,320,000.00
BBQ Philly Steak | ₦ 3,808,000.00
Beef Suya | ₦ 2,943,000.00
Cardinality
Many to one (*:1)
Cross filter direction
Single
Make this relationship active
Apply security filter in both directions
Assume referential integrity
OK
Cancel

And below is what it would all look like when you are done.



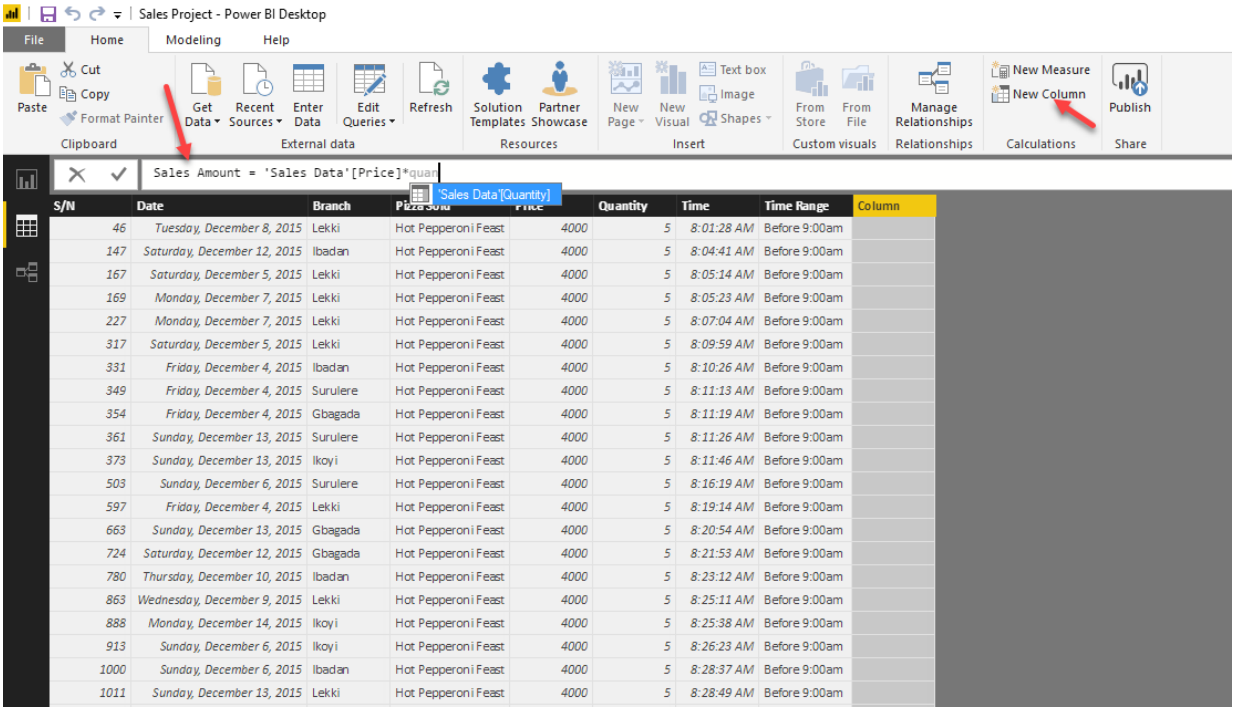
Now it's time to do some formula-ing. Or DAX-ing as Power BI uses Data Analysis Expressions (DAX). You can download the official Microsoft reference material for the DAX formulas here: http://download.microsoft.com/download/0/f/b/0fbfaa46-2bfd-478f-8e56-7bf3c672df9d/data%20analysis%20expressions%20-%20dax%20-%20reference.pdf

So head to the Data part (on the left) of the main Power BI window. And select the Sales Data table as we need to do some tasks on it.



The Sales Data has Price and Quantity field but no Sales Amount field. So we need to create that. And the good thing is that the formula syntax is similar to that in Excel, especially formulas in Excel Tables.

So we first create a new column, by rightclicking any field in the table and selecting New Column or clicking on New Column at the extreme right under the Home menu. Then change the name from the default "Column" to any name you find more appropriate.


Sales Project - Power BI Desktop
File
Home
Modeling
Help
Paste
Cut
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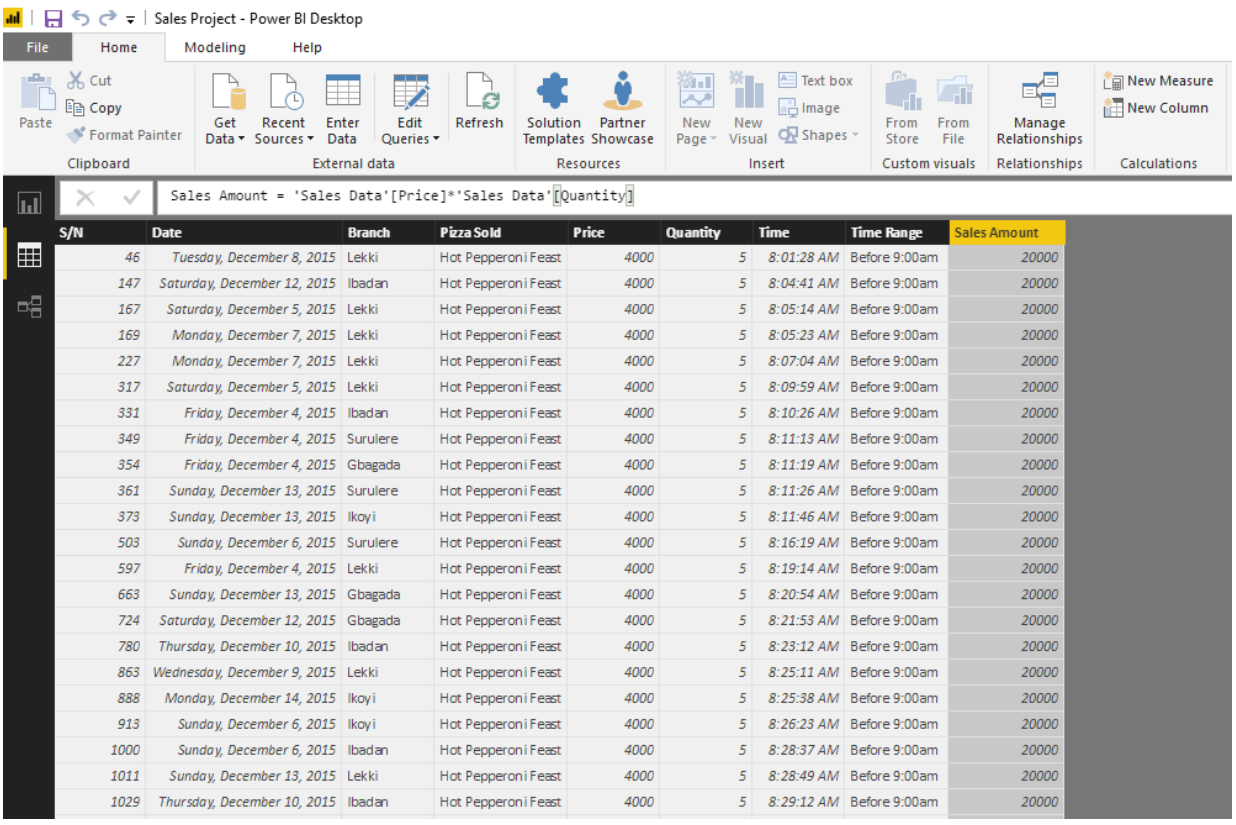
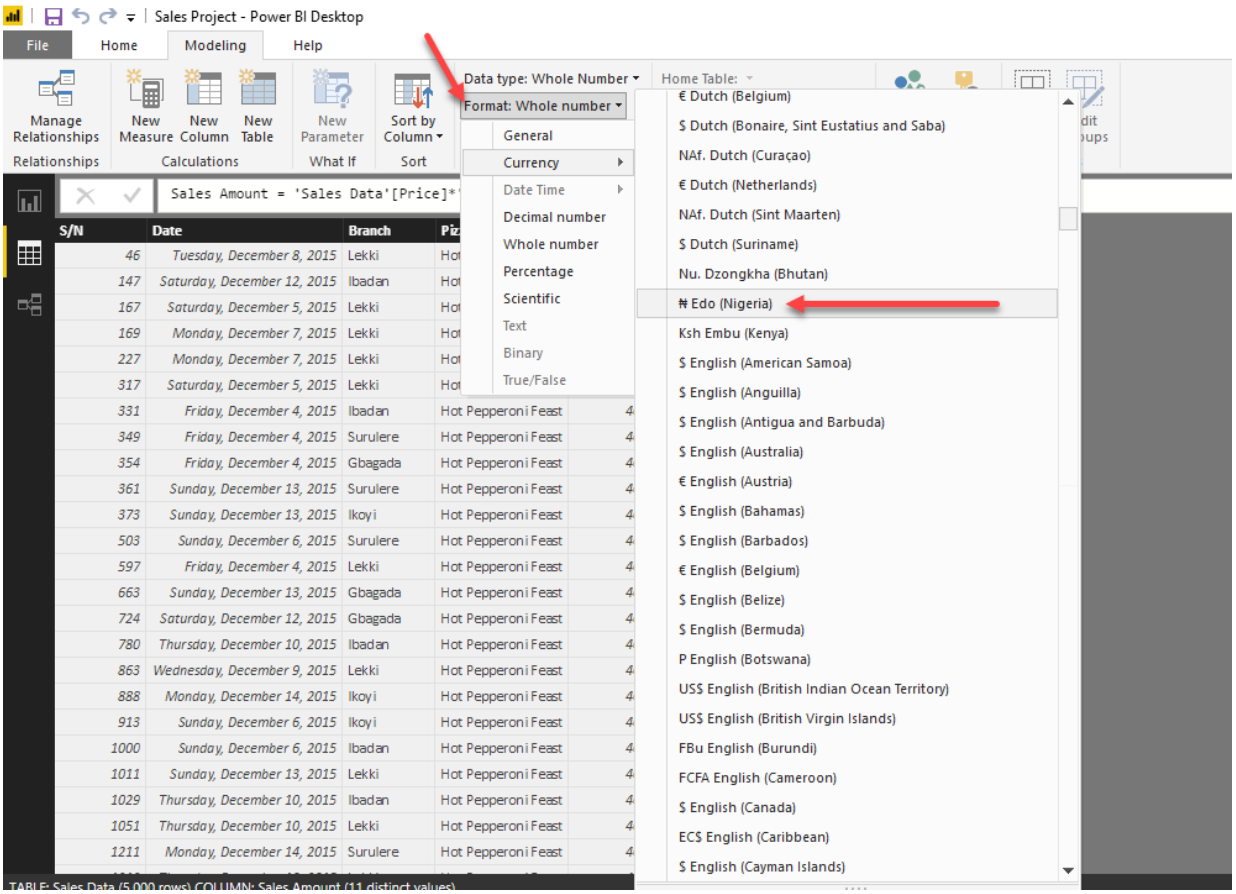
Format Painter
Clipboard
Get Data
Recent Sources
Enter Data
Edit Queries
Refresh
External data
Solution Templates
Partner Showcase
Resources
New Page
New Visual
Text box
Image
Shapes
Insert
From Store
From File
Custom visuals
Manage Relationships
Relationships
New Measure
New Column
Calculations
Publish
Share
Sales Amount = 'Sales Data'[Price]*quan
'Sales Data'[Quantity]
S/N
Date
Branch
Pizza Sold
Price
Quantity
Time
Time Range
Column
46 Tuesday, December 8, 2015 Lekki Hot Pepperoni Feast 4000 5 8:01:28 AM Before 9:00am
147 Saturday, December 12, 2015 Ibadan Hot Pepperoni Feast 4000 5 8:04:41 AM Before 9:00am
167 Saturday, December 5, 2015 Lekki Hot Pepperoni Feast 4000 5 8:05:14 AM Before 9:00am
169 Monday, December 7, 2015 Lekki Hot Pepperoni Feast 4000 5 8:05:23 AM Before 9:00am
227 Monday, December 7, 2015 Lekki Hot Pepperoni Feast 4000 5 8:07:04 AM Before 9:00am
317 Saturday, December 5, 2015 Lekki Hot Pepperoni Feast 4000 5 8:09:59 AM Before 9:00am
331 Friday, December 4, 2015 Ibadan Hot Pepperoni Feast 4000 5 8:10:26 AM Before 9:00am
349 Friday, December 4, 2015 Surulere Hot Pepperoni Feast 4000 5 8:11:13 AM Before 9:00am
354 Friday, December 4, 2015 Gbagada Hot Pepperoni Feast 4000 5 8:11:19 AM Before 9:00am
361 Sunday, December 13, 2015 Surulere Hot Pepperoni Feast 4000 5 8:11:26 AM Before 9:00am
373 Sunday, December 13, 2015 Ikoyi Hot Pepperoni Feast 4000 5 8:11:46 AM Before 9:00am
503 Sunday, December 6, 2015 Surulere Hot Pepperoni Feast 4000 5 8:16:19 AM Before 9:00am
597 Friday, December 4, 2015 Lekki Hot Pepperoni Feast 4000 5 8:19:14 AM Before 9:00am
663 Sunday, December 13, 2015 Gbagada Hot Pepperoni Feast 4000 5 8:20:54 AM Before 9:00am
724 Saturday, December 12, 2015 Gbagada Hot Pepperoni Feast 4000 5 8:21:53 AM Before 9:00am
780 Thursday, December 10, 2015 Ibadan Hot Pepperoni Feast 4000 5 8:23:12 AM Before 9:00am
863 Wednesday, December 9, 2015 Lekki Hot Pepperoni Feast 4000 5 8:25:11 AM Before 9:00am
888 Monday, December 14, 2015 Ikoyi Hot Pepperoni Feast 4000 5 8:25:38 AM Before 9:00am
913 Sunday, December 6, 2015 Ikoyi Hot Pepperoni Feast 4000 5 8:26:23 AM Before 9:00am
1000 Sunday, December 6, 2015 Ibadan Hot Pepperoni Feast 4000 5 8:28:37 AM Before 9:00am
1011 Sunday, December 13, 2015 Lekki Hot Pepperoni Feast 4000 5 8:28:49 AM Before 9:00am

Sales Amount = 'Sales Data'[Price]*'Sales Data'[Quantity]



S/N	Date	Branch	Pizza Sold	Price	Quantity	Time	Time Range	Sales Amount
46	Tuesday, December 8, 2015	Lekki	Hot Pepperoni Feast	4000	5	8:01:28 AM	Before 9:00am	20000
147	Saturday, December 12, 2015	Ibadan	Hot Pepperoni Feast	4000	5	8:04:41 AM	Before 9:00am	20000
167	Saturday, December 5, 2015	Lekki	Hot Pepperoni Feast	4000	5	8:05:14 AM	Before 9:00am	20000
169	Monday, December 7, 2015	Lekki	Hot Pepperoni Feast	4000	5	8:05:23 AM	Before 9:00am	20000
227	Monday, December 7, 2015	Lekki	Hot Pepperoni Feast	4000	5	8:07:04 AM	Before 9:00am	20000
317	Saturday, December 5, 2015	Lekki	Hot Pepperoni Feast	4000	5	8:09:59 AM	Before 9:00am	20000
331	Friday, December 4, 2015	Ibadan	Hot Pepperoni Feast	4000	5	8:10:26 AM	Before 9:00am	20000
349	Friday, December 4, 2015	Surulere	Hot Pepperoni Feast	4000	5	8:11:13 AM	Before 9:00am	20000
354	Friday, December 4, 2015	Gbagada	Hot Pepperoni Feast	4000	5	8:11:19 AM	Before 9:00am	20000
361	Sunday, December 13, 2015	Surulere	Hot Pepperoni Feast	4000	5	8:11:26 AM	Before 9:00am	20000
373	Sunday, December 13, 2015	Ikoyi	Hot Pepperoni Feast	4000	5	8:11:46 AM	Before 9:00am	20000
503	Sunday, December 6, 2015	Surulere	Hot Pepperoni Feast	4000	5	8:16:19 AM	Before 9:00am	20000
597	Friday, December 4, 2015	Lekki	Hot Pepperoni Feast	4000	5	8:19:14 AM	Before 9:00am	20000
663	Sunday, December 13, 2015	Gbagada	Hot Pepperoni Feast	4000	5	8:20:54 AM	Before 9:00am	20000
724	Saturday, December 12, 2015	Gbagada	Hot Pepperoni Feast	4000	5	8:21:53 AM	Before 9:00am	20000
780	Thursday, December 10, 2015	Ibadan	Hot Pepperoni Feast	4000	5	8:23:12 AM	Before 9:00am	20000
863	Wednesday, December 9, 2015	Lekki	Hot Pepperoni Feast	4000	5	8:25:11 AM	Before 9:00am	20000
888	Monday, December 14, 2015	Ikoyi	Hot Pepperoni Feast	4000	5	8:25:38 AM	Before 9:00am	20000
913	Sunday, December 6, 2015	Ikoyi	Hot Pepperoni Feast	4000	5	8:26:23 AM	Before 9:00am	20000
1000	Sunday, December 6, 2015	Ibadan	Hot Pepperoni Feast	4000	5	8:28:37 AM	Before 9:00am	20000
1011	Sunday, December 13, 2015	Lekki	Hot Pepperoni Feast	4000	5	8:28:49 AM	Before 9:00am	20000
1029	Thursday, December 10, 2015	Ibadan	Hot Pepperoni Feast	4000	5	8:29:12 AM	Before 9:00am	20000

One more cool thing. Change the Sales field and other money fields to Currency. I'll select my country currency: Naira.


Sales Project - Power BI Desktop
File
Home
Modeling
Help
Manage Relationships
New Measure
New Column
New Table
New Parameter
Sort by Column
Relationships
Calculations
What If
Sort
Data type: Whole Number
Format: Whole number
Home Table:
General
Currency
Date Time
Decimal number
Whole number
Percentage
Scientific
Text
Binary
True/False
Sales Amount = 'Sales Data'[Price]*
S/N
Date
Branch
46 Tuesday, December 8, 2015 Lekki
147 Saturday, December 12, 2015 Ibadan
167 Saturday, December 5, 2015 Lekki
169 Monday, December 7, 2015 Lekki
227 Monday, December 7, 2015 Lekki
317 Saturday, December 5, 2015 Lekki
331 Friday, December 4, 2015 Ibadan Hot Pepperoni Feast
349 Friday, December 4, 2015 Surulere Hot Pepperoni Feast
354 Friday, December 4, 2015 Gbagada Hot Pepperoni Feast
361 Sunday, December 13, 2015 Surulere Hot Pepperoni Feast
373 Sunday, December 13, 2015 Ikoyi Hot Pepperoni Feast
503 Sunday, December 6, 2015 Surulere Hot Pepperoni Feast
597 Friday, December 4, 2015 Lekki Hot Pepperoni Feast
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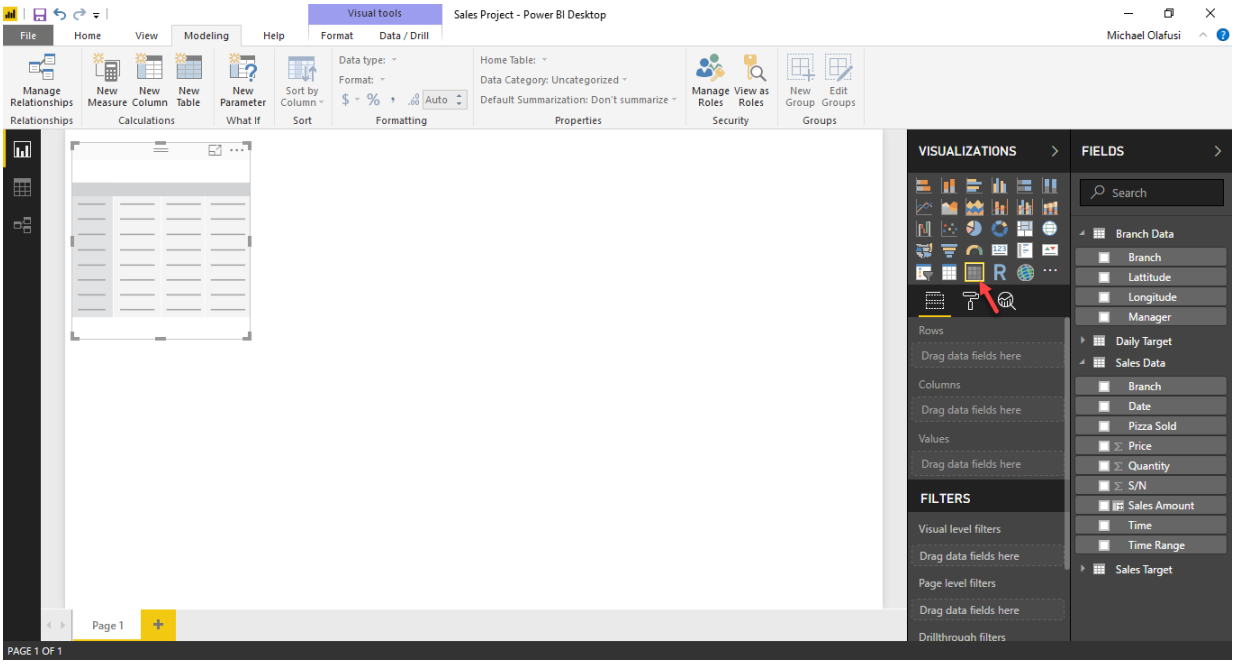
913 Sunday, December 6, 2015 Ikoyi Hot Pepperoni Feast
1000 Sunday, December 6, 2015 Ibadan Hot Pepperoni Feast
1011 Sunday, December 13, 2015 Lekki Hot Pepperoni Feast
1029 Thursday, December 10, 2015 Ibadan Hot Pepperoni Feast
1051 Thursday, December 10, 2015 Lekki Hot Pepperoni Feast
1211 Monday, December 14, 2015 Surulere Hot Pepperoni Feast
€ Dutch (Belgium)
$ Dutch (Bonaire, Sint Eustatius and Saba)
NAf. Dutch (Curaçao)
€ Dutch (Netherlands)
NAf. Dutch (Sint Maarten)
$ Dutch (Suriname)
Nu. Dzongkha (Bhutan)
₦ Edo (Nigeria)
Ksh Embu (Kenya)
$ English (American Samoa)
$ English (Anguilla)
$ English (Antigua and Barbuda)
$ English (Australia)
€ English (Austria)
$ English (Bahamas)
$ English (Barbados)
€ English (Belgium)
$ English (Belize)
$ English (Bermuda)
P English (Botswana)
US$ English (British Indian Ocean Territory)
US$ English (British Virgin Islands)
FBu English (Burundi)
FCFA English (Cameroon)
$ English (Canada)
EC$ English (Caribbean)
$ English (Cayman Islands)

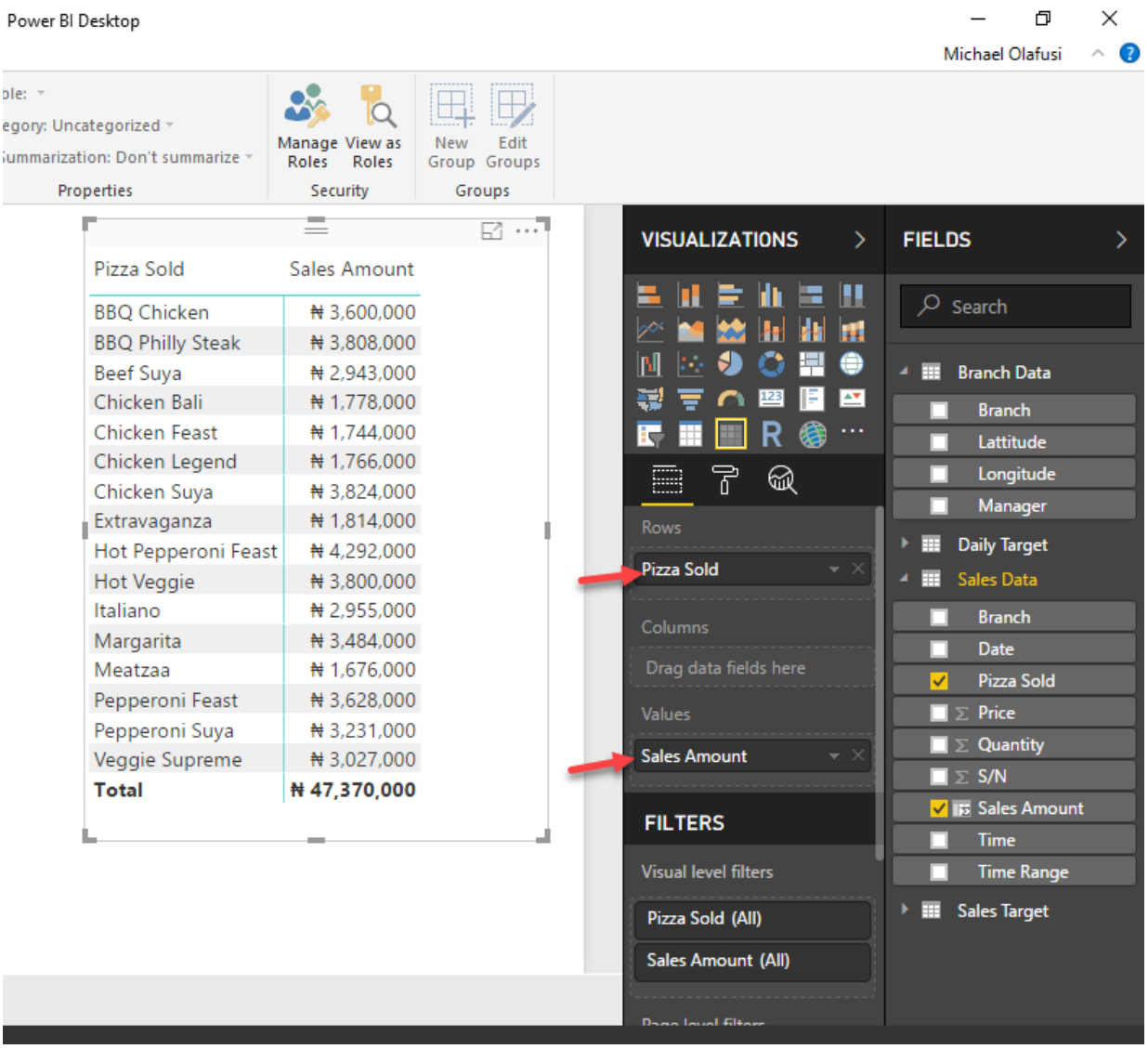
Now we go into the visual part of the report creation.

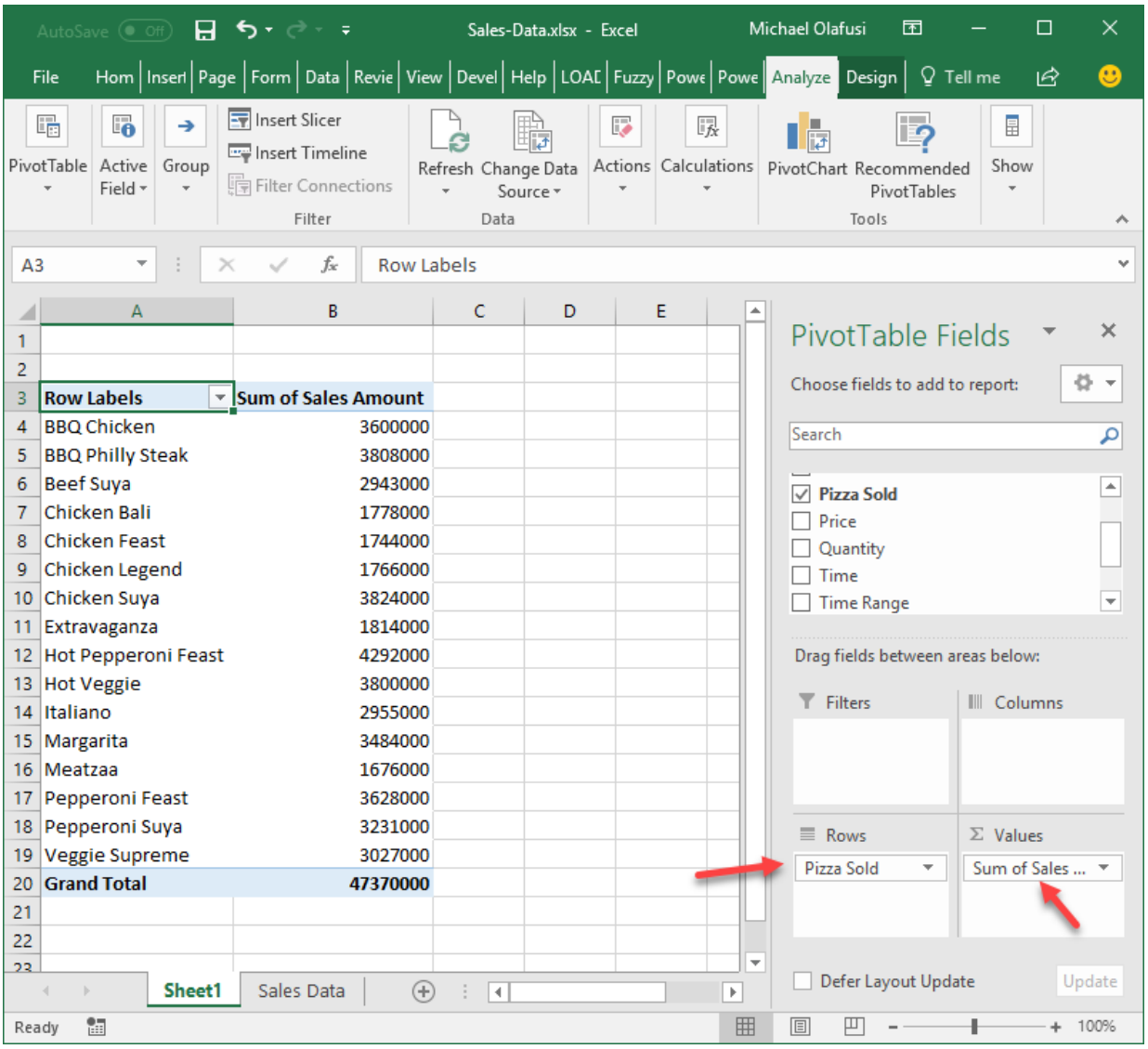
Click on Reports on the left part of the main Power BI window. And let's start with a PivotTable-like report showing products against sales amount.



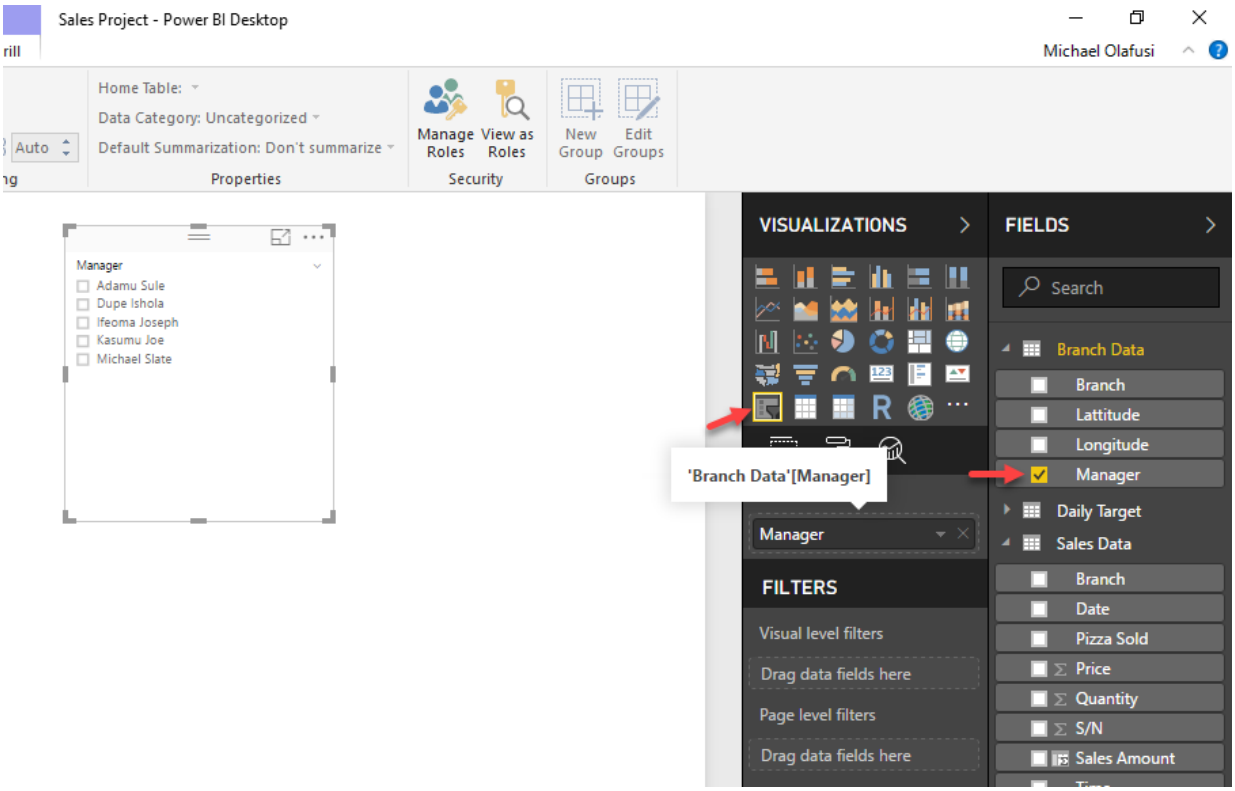
In Power BI, everything is a visual. Even a table is a visual. You have to pick the visual you want and drop the fields you need into the appropriate sections of the visual components.

Notice the similarity between the Matrix visual in Power BI and the PivotTable in Excel. If you ask me, I'll say they are exactly same. So huge bonus for you if you already use PivotTable in Excel.

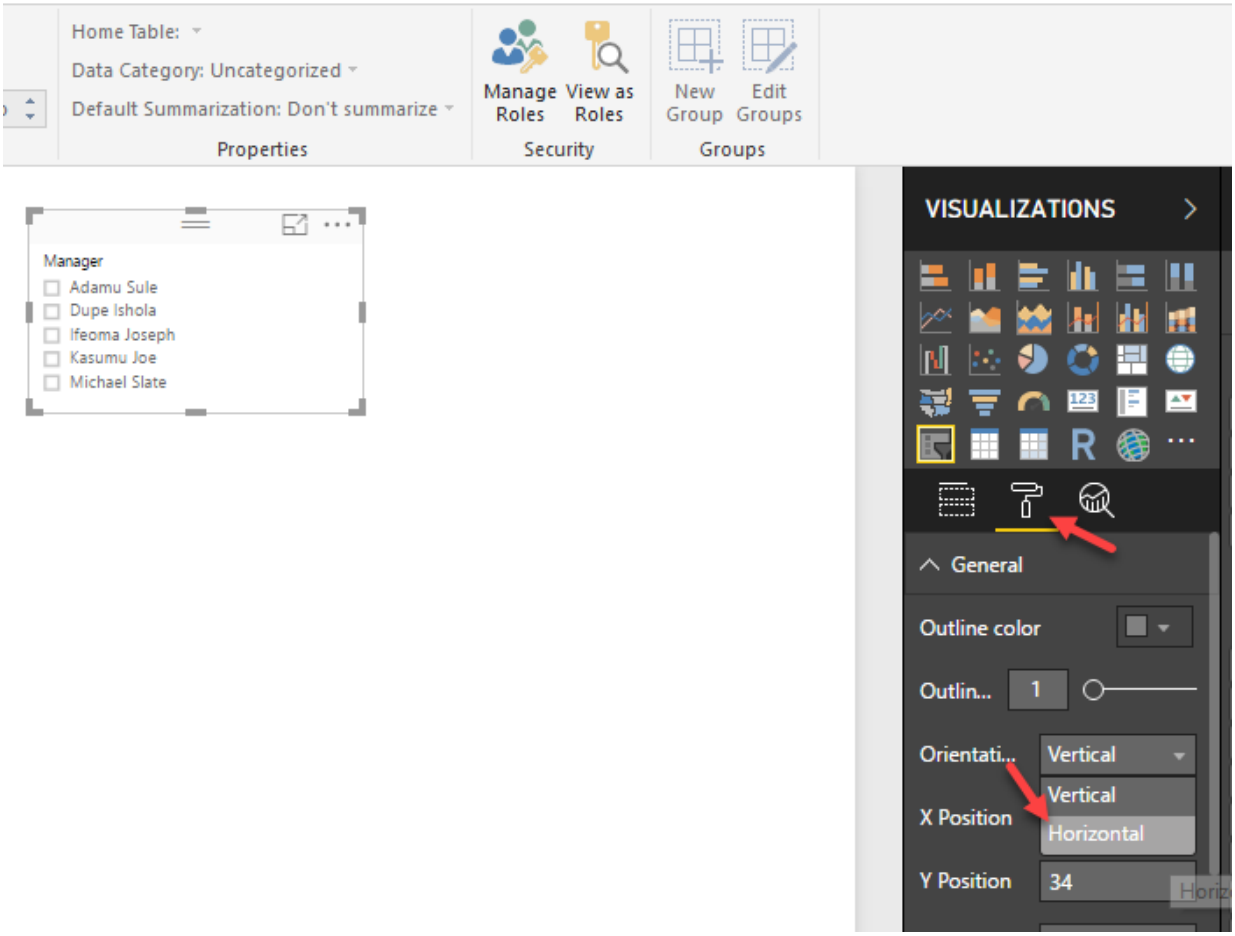

Power BI Desktop
Michael Olafusi
Manage Roles
View as Roles
New Group
Edit Groups
Properties
Security
Groups
Pizza Sold
Sales Amount
BBQ Chicken ₦ 3,600,000
BBQ Philly Steak ₦ 3,808,000
Beef Suya ₦ 2,943,000
Chicken Bali ₦ 1,778,000
Chicken Feast ₦ 1,744,000
Chicken Legend ₦ 1,766,000
Chicken Suya ₦ 3,824,000
Extravaganza ₦ 1,814,000
Hot Pepperoni Feast ₦ 4,292,000
Hot Veggie ₦ 3,800,000
Italiano ₦ 2,955,000
Margarita ₦ 3,484,000
Meatzaa ₦ 1,676,000
Pepperoni Feast ₦ 3,628,000
Pepperoni Suya ₦ 3,231,000
Veggie Supreme ₦ 3,027,000
Total ₦ 47,370,000
VISUALIZATIONS
FIELDS
Search
Rows
Pizza Sold
Columns
Drag data fields here
Values
Sales Amount
FILTERS
Visual level filters
Pizza Sold (All)
Sales Amount (All)
Branch Data
Branch
Lattitude
Longitude
Manager
Daily Target
Sales Data
Branch
Date
Pizza Sold
Price
Quantity
S/N
Sales Amount
Time
Time Range
Sales Target

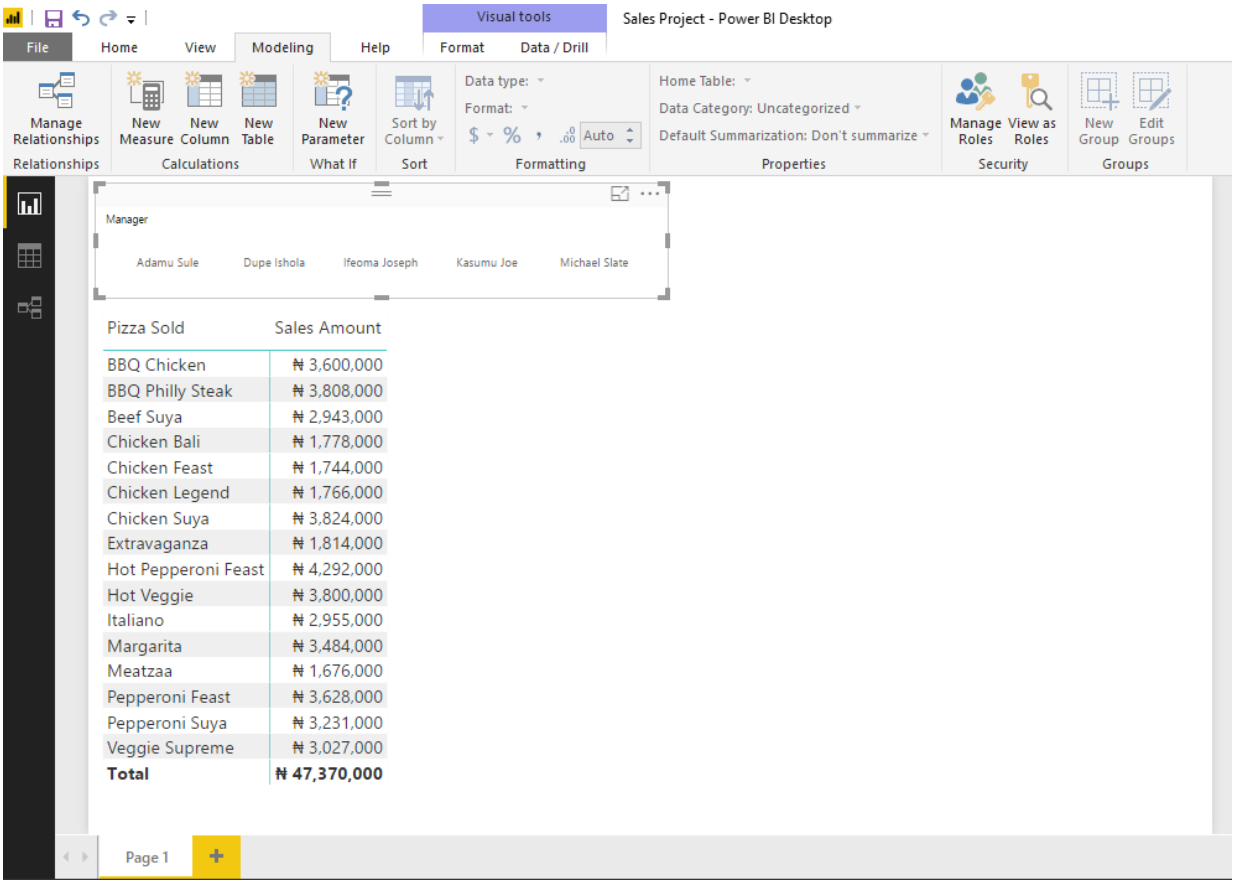


Since we are now done with the Sales by Product table, let's put in a Slicer that acts as a filter on the Branch Manager.



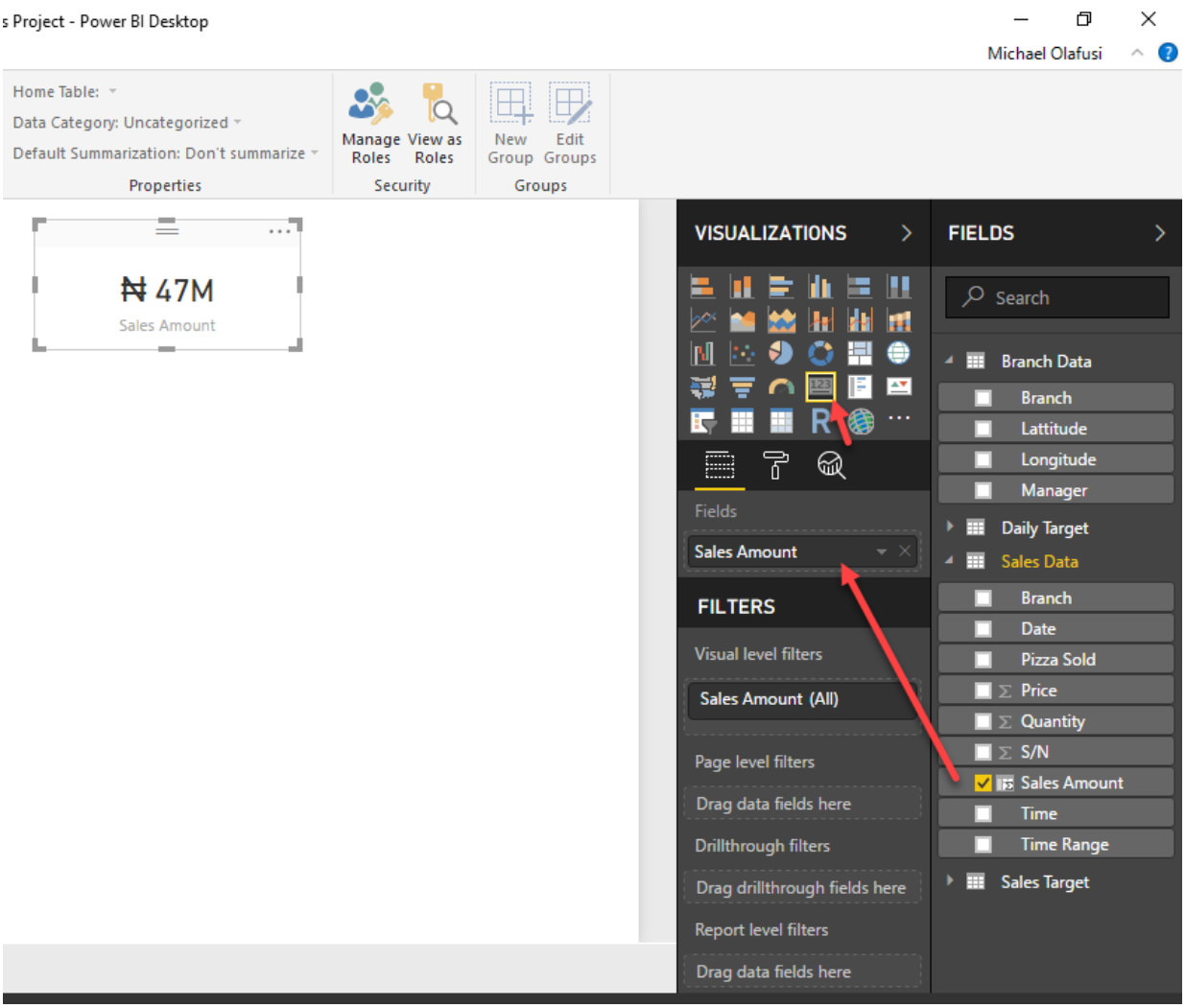
I think it would look better if it displays horizontally. To change the look of any visual, you click on paint brush icon, you get a bouquet of options that lets you change everything from text size and color to structure of the visual. There I change the Orientation from Vertical to Horizontal.


Home Table:
Data Category: Uncategorized
Default Summarization: Don't summarize
Properties
Manage Roles
View as Roles
Security
New Group
Edit Groups
Groups
Manager
Adamu Sule
Dupe Ishola
Ifeoma Joseph
Kasumu Joe
Michael Slate
VISUALIZATIONS
General
Outline color
Outlin...
1
Orientati...
Vertical
Vertical
Horizontal
X Position
Y Position
34



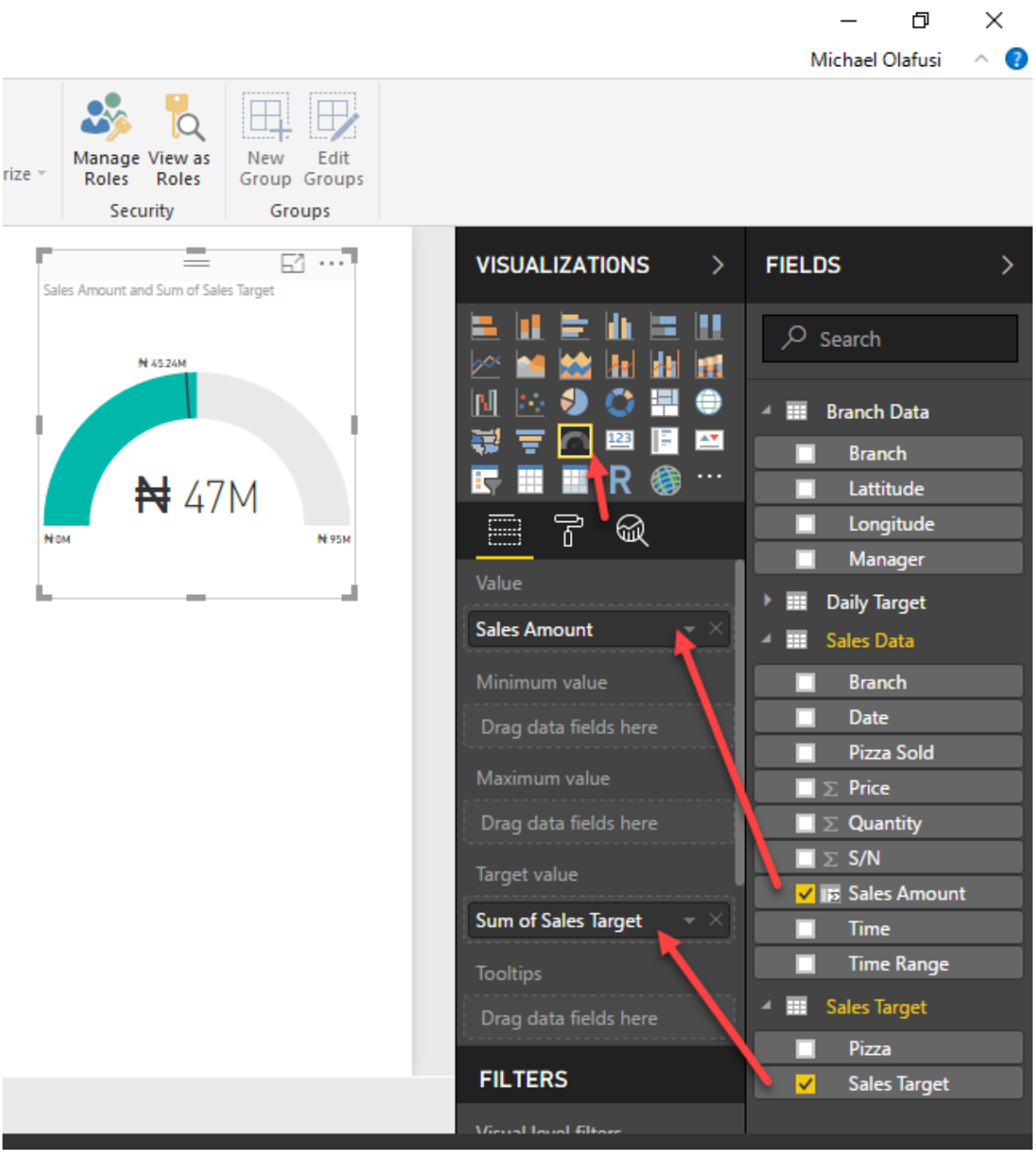
Pizza Sold	Sales Amount
BBQ Chicken	₦ 3,600,000
BBQ Philly Steak	₦ 3,808,000
Beef Suya	₦ 2,943,000
Chicken Bali	₦ 1,778,000
Chicken Feast	₦ 1,744,000
Chicken Legend	₦ 1,766,000
Chicken Suya	₦ 3,824,000
Extravaganza	₦ 1,814,000
Hot Pepperoni Feast	₦ 4,292,000
Hot Veggie	₦ 3,800,000
Italiano	₦ 2,955,000
Margarita	₦ 3,484,000
Meatzaa	₦ 1,676,000
Pepperoni Feast	₦ 3,628,000
Pepperoni Suya	₦ 3,231,000
Veggie Supreme	₦ 3,027,000
Total	**₦ 47,370,000**

Next is we add a Card that shows the total sales figure.

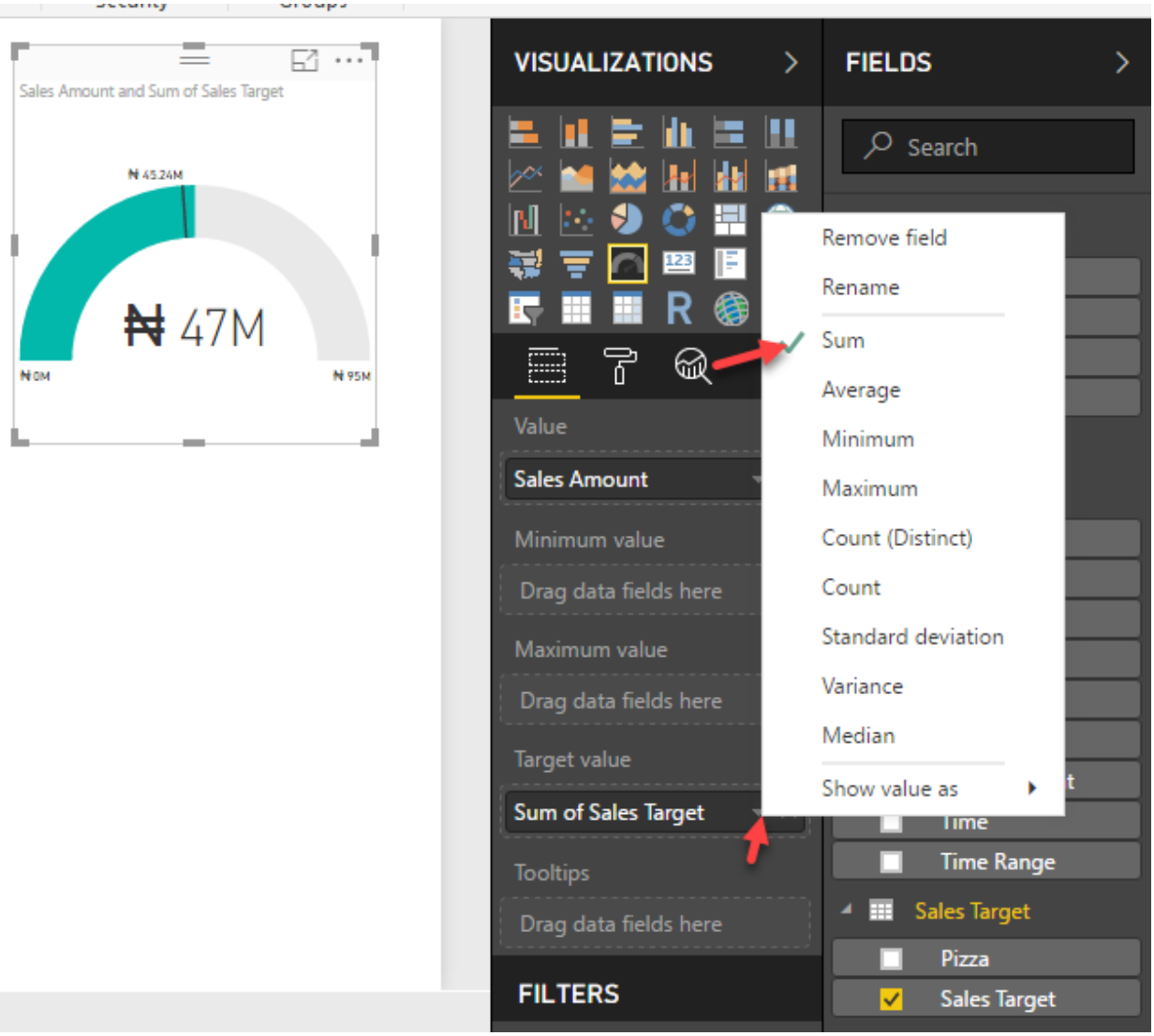


See how everything is a visual.

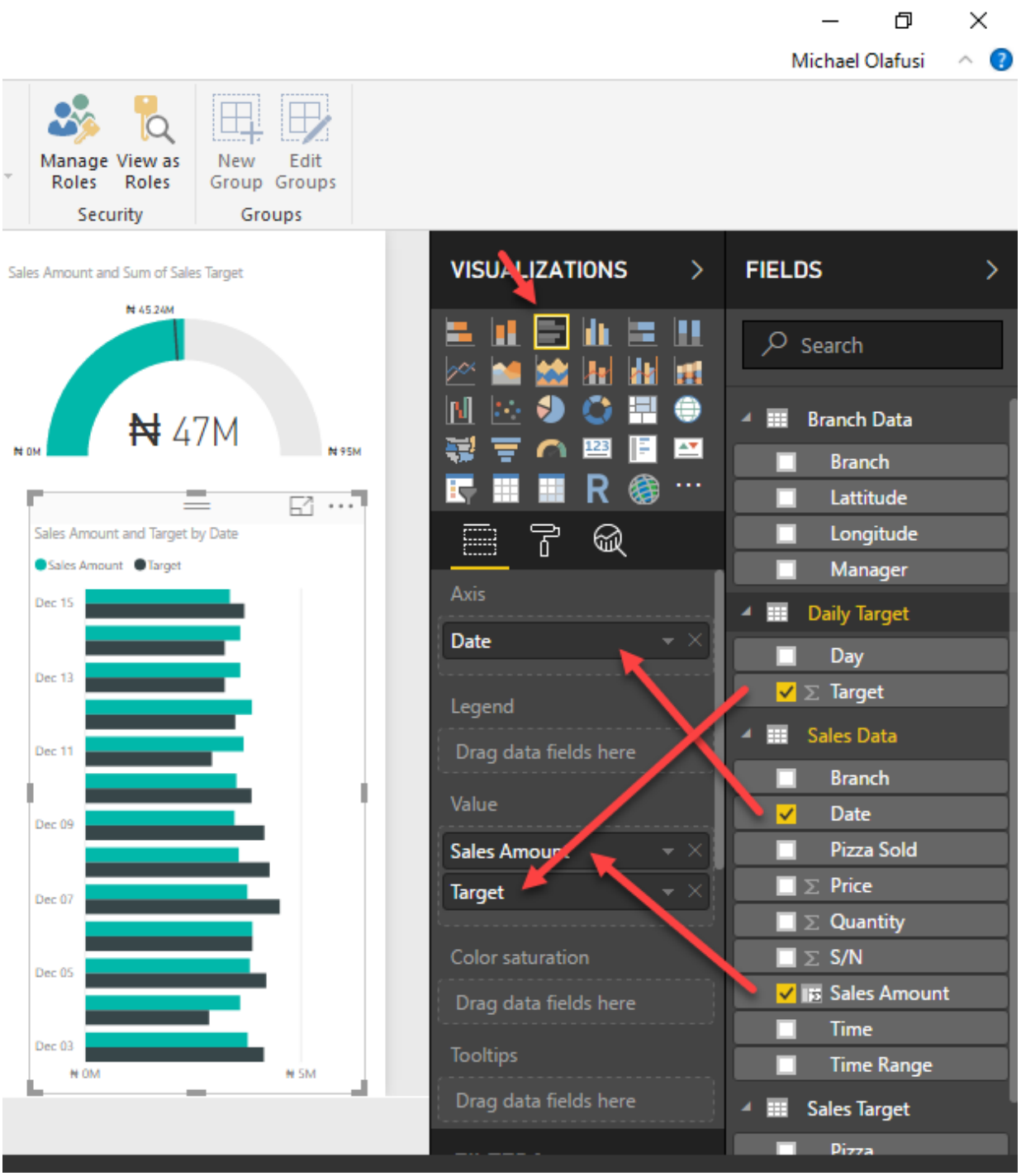
Now we add a Gauge that shows sales against target.



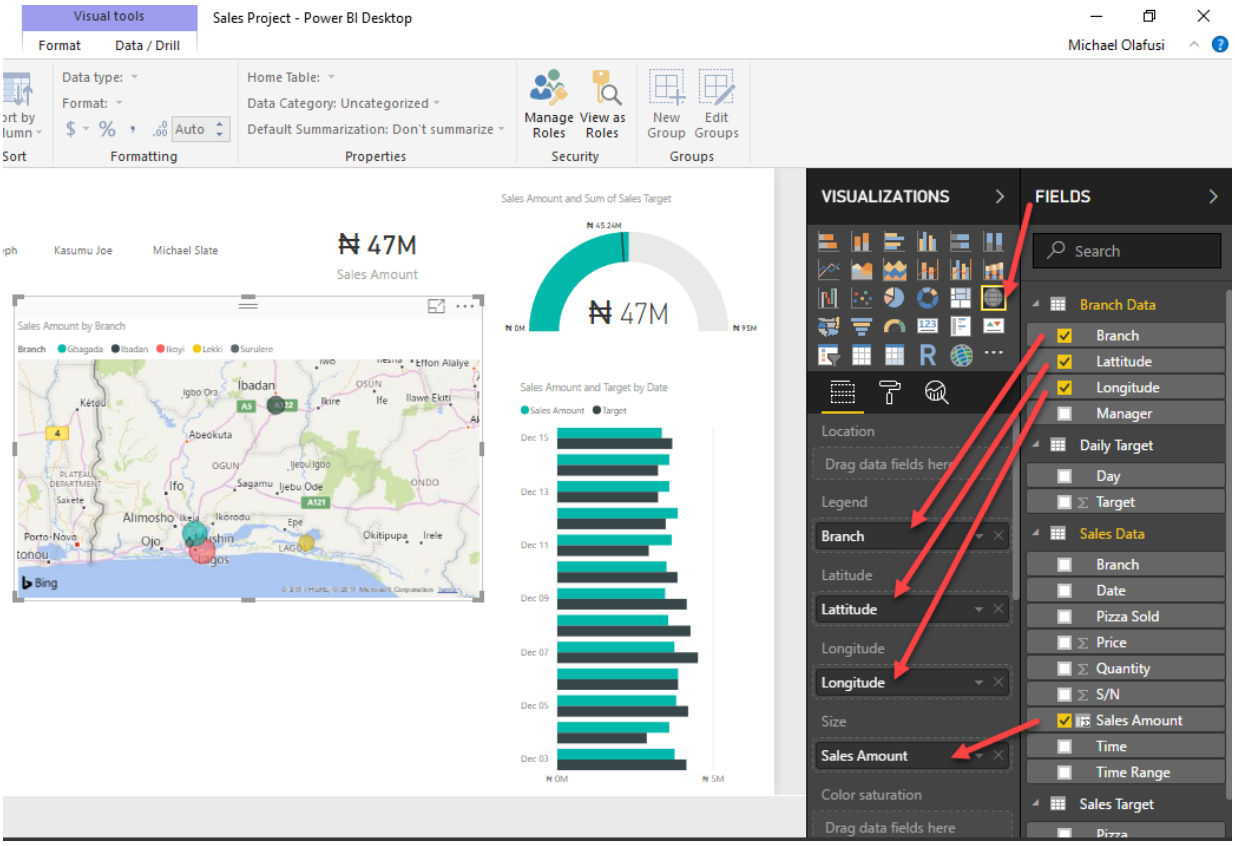
And you can change the type of calculations done on any field you use. Just click on the dropdown arrow beside the field name in the visual panel.



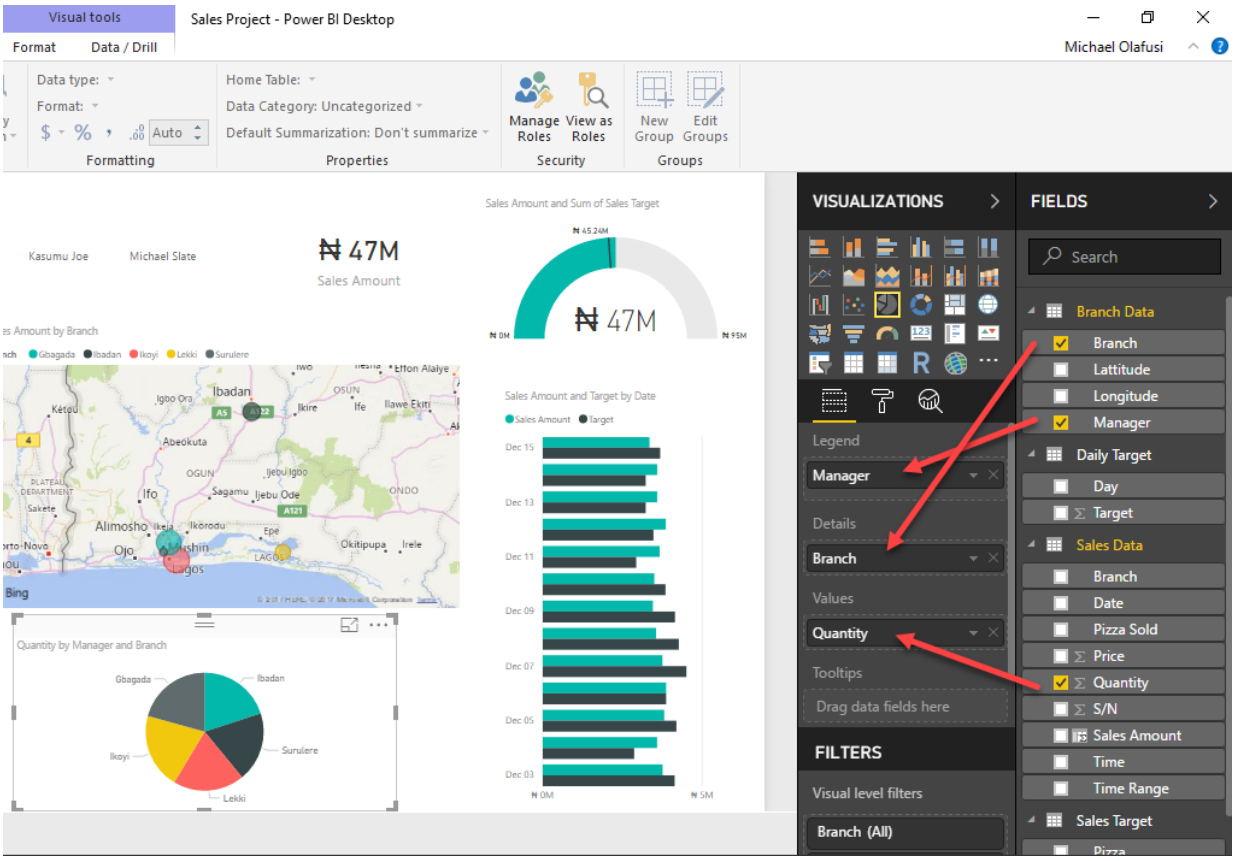
And now we add bar chart of sales by products against targets.



Let's do a cool one now. Add a map visual.

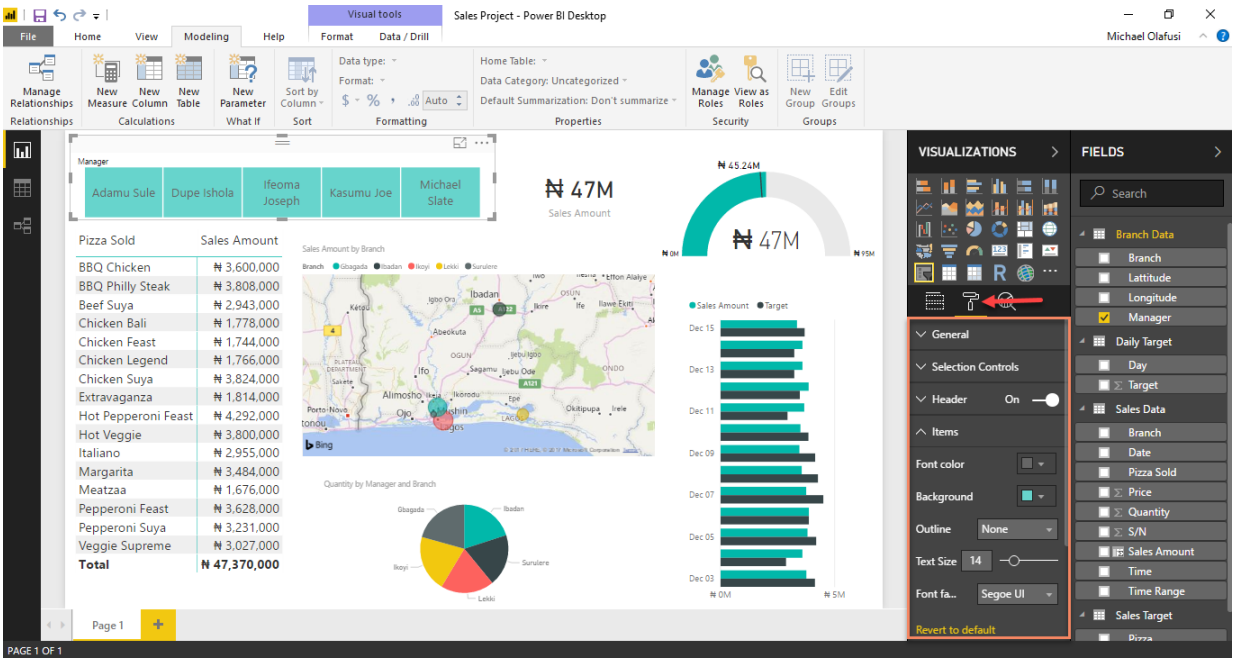


And finally, we add a Pie Chart.

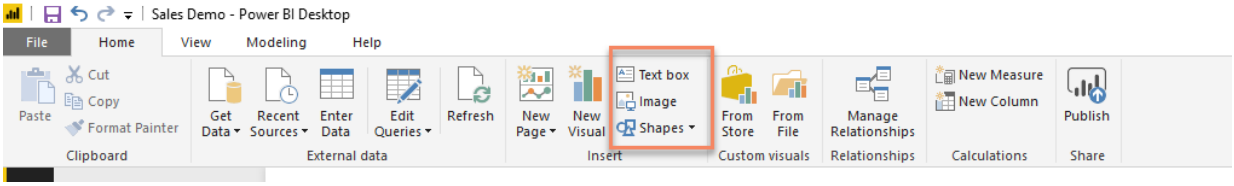


You might want to change the look of some or all of the visuals. You can even add a background image or colour to the white page.

See below what I did to the Slicer to improve its look.

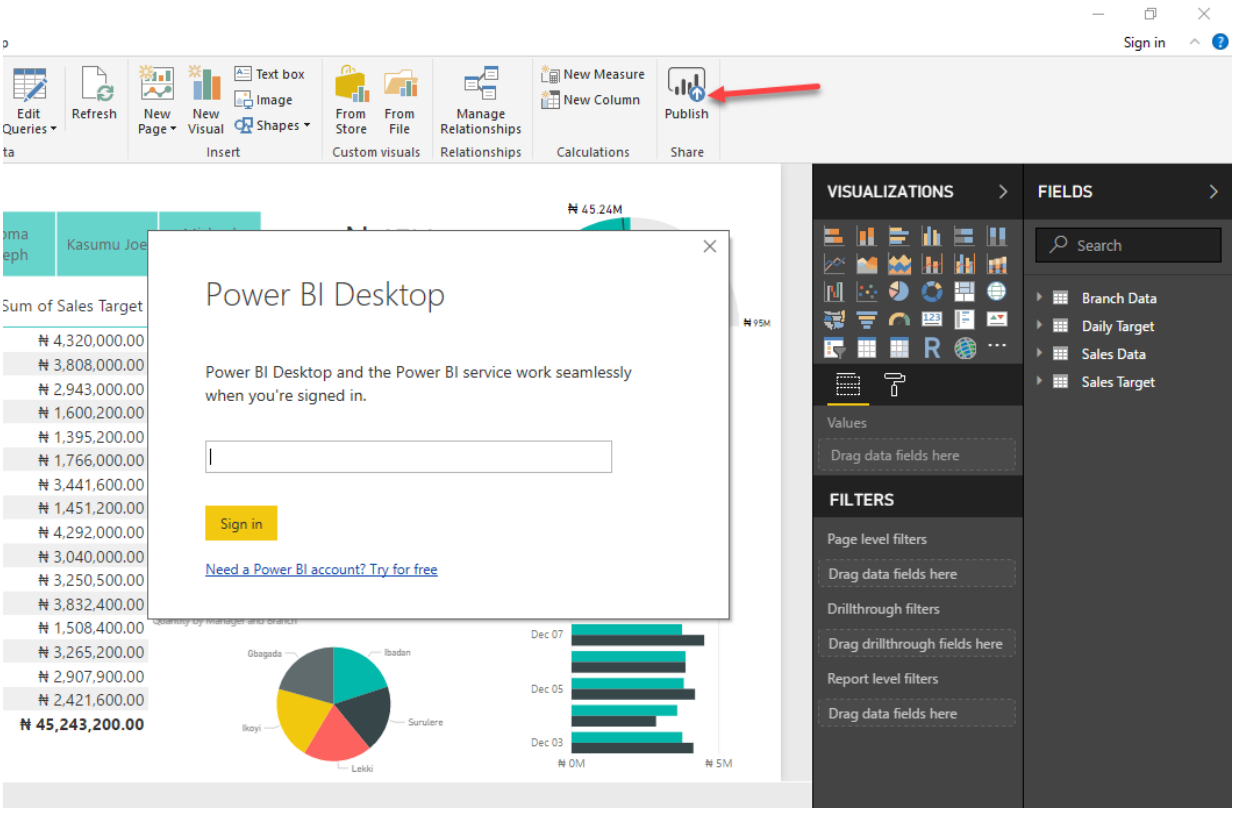


You can also add images, shapes and text boxes to your report.



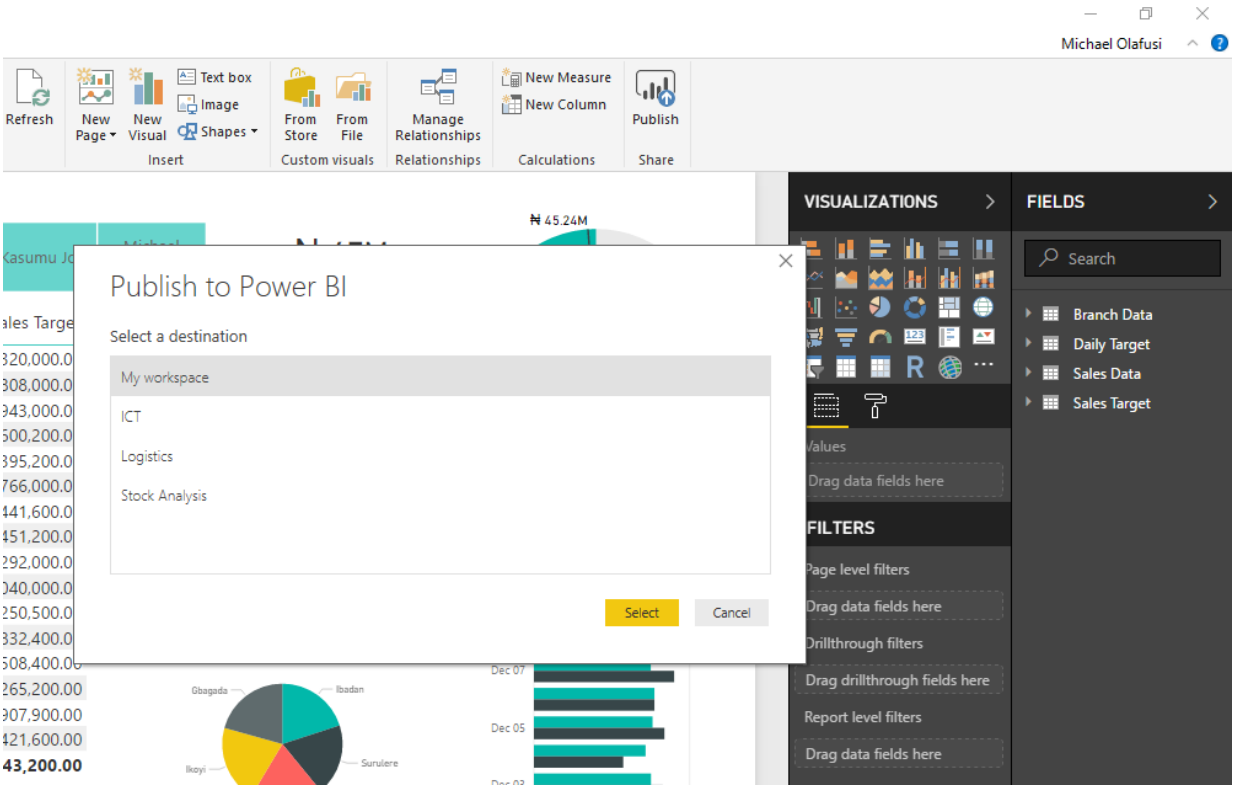
And we are done with our first report building from scratch.

Next phase is to publish it and share with our boss and colleagues.



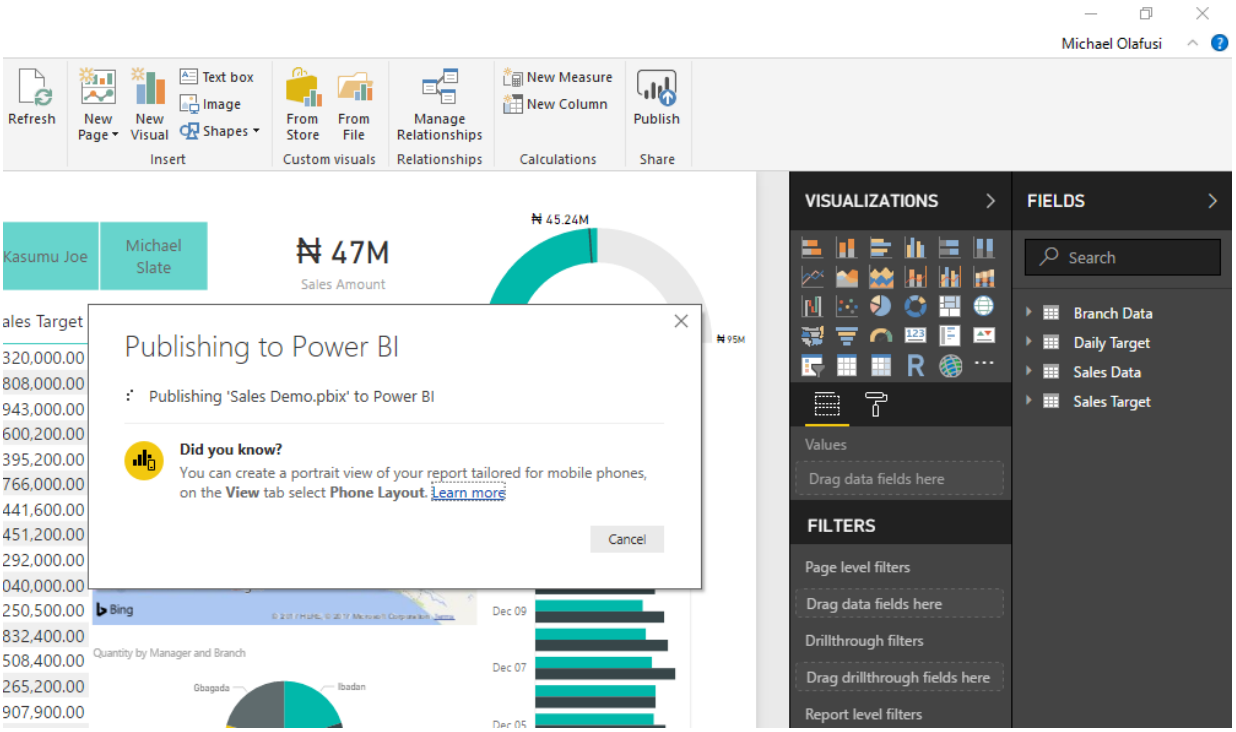
If you've not signed in to your Power BI account, you will be prompted to.

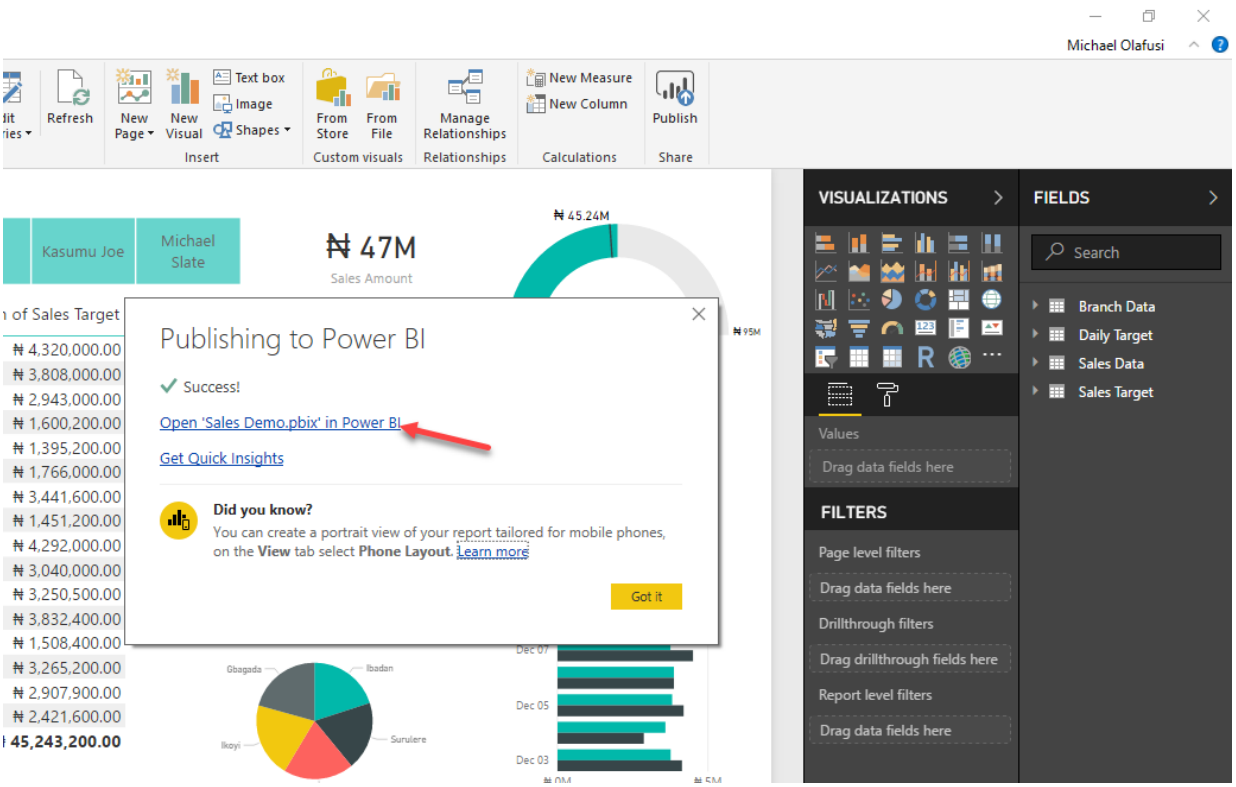
Then you pick the workspace you want the report published to. In every Power BI account, there is a default workspace called My workspace. Workspaces are what you create when you want to collaborate with colleagues on a report. It allows for equal access to making changes to the report and those changes are propagated rather than limited to your own copy of the report. You create them from the online Power BI service (www.powerbi.com).



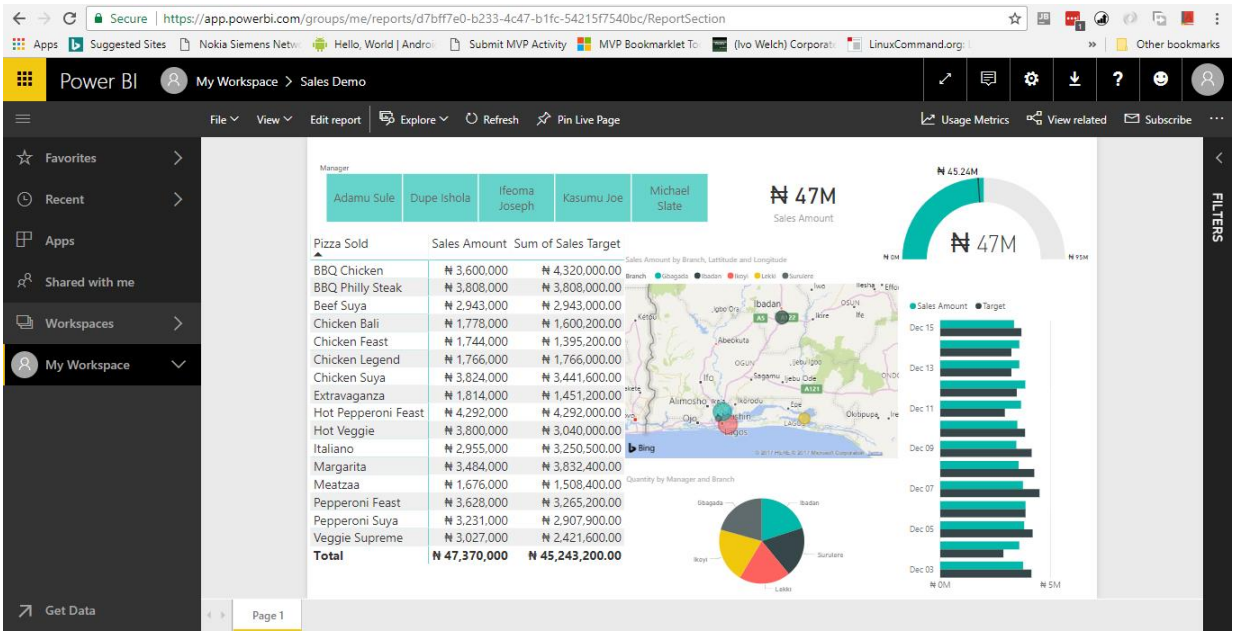
I chose My workspace.

Then click on the report link upon successful publishing.

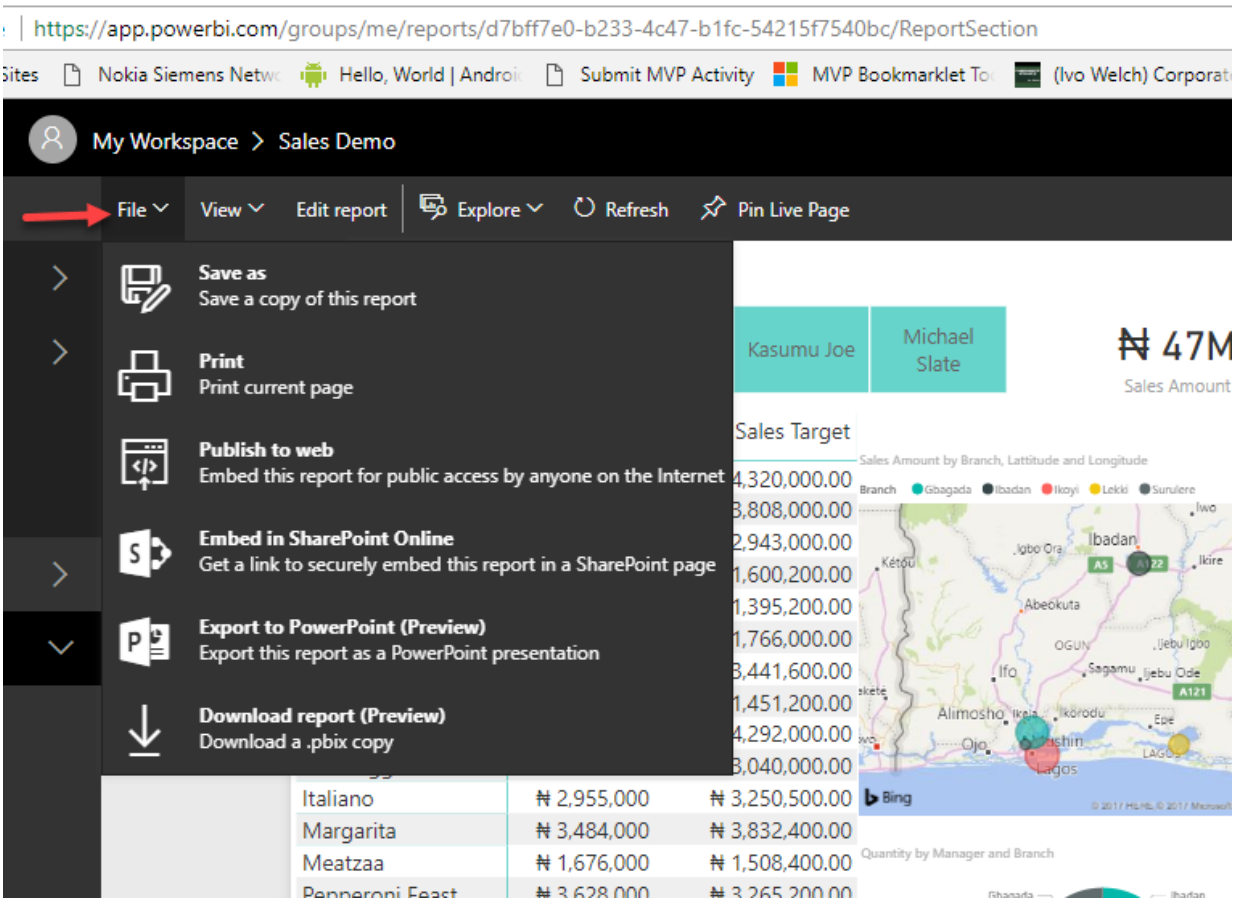




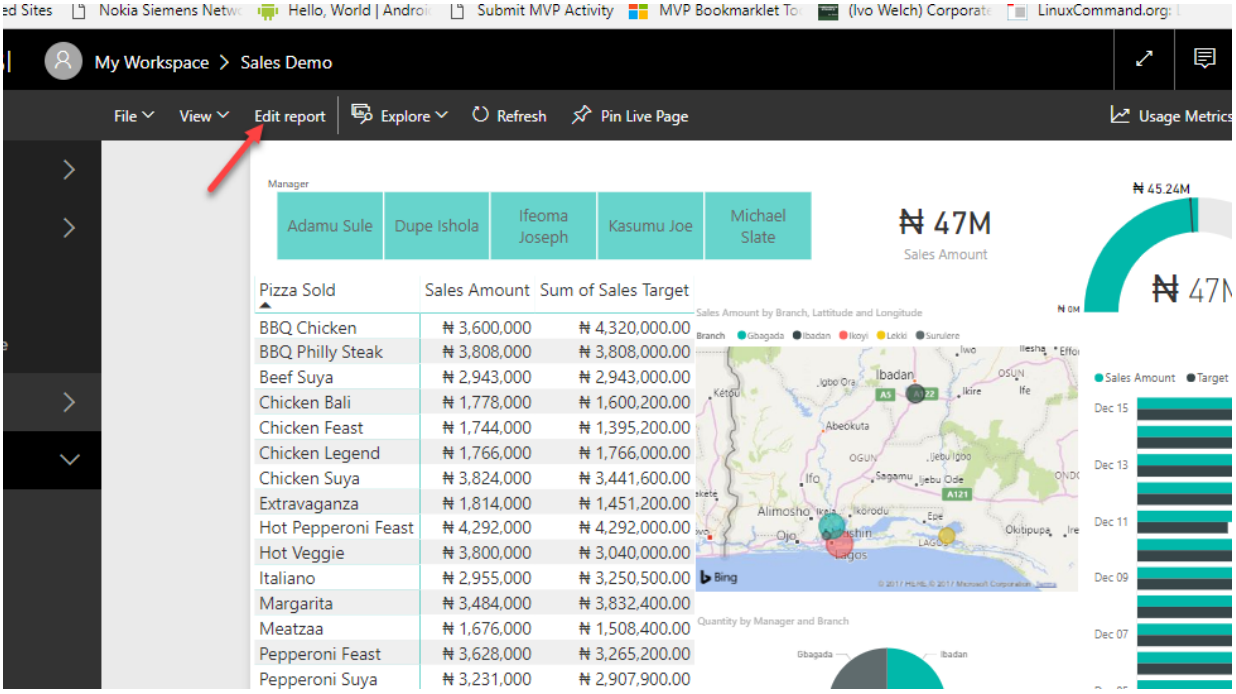
And here is what the online published version is like.

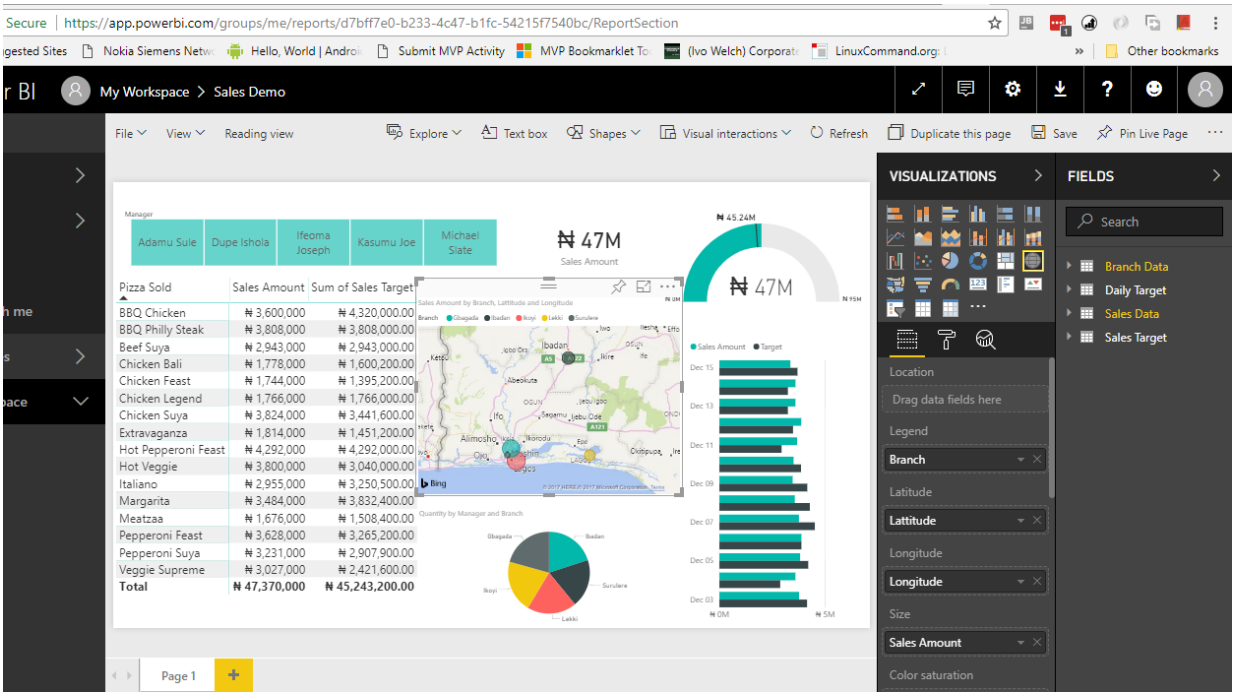


And you can do super cool stuffs like export the entire report as a PowerPoint deck or print or even publish as a web link that can be shared with anyone. Just click on File.



You can also edit the visuals or add new ones, even on new report pages. Just click on Edit and you get access to the type of designer tools you already are familiar with in the Power BI software.

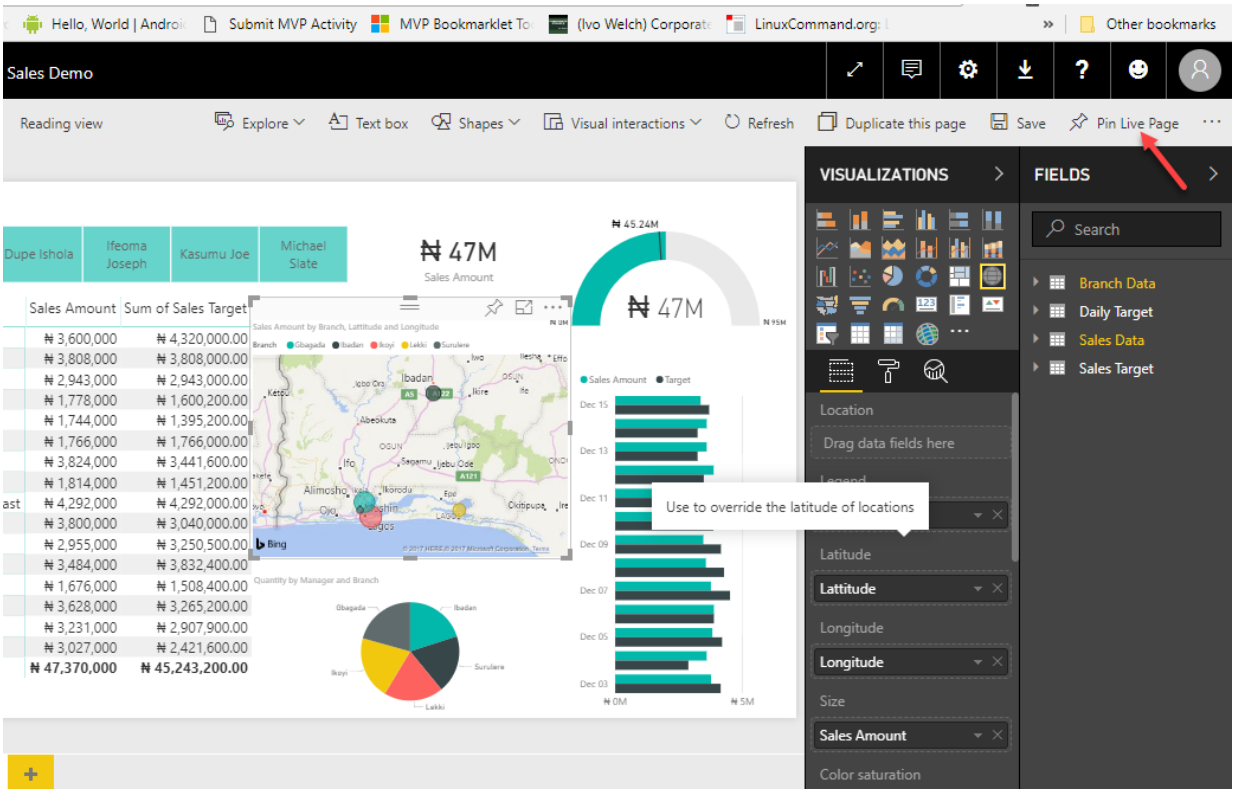




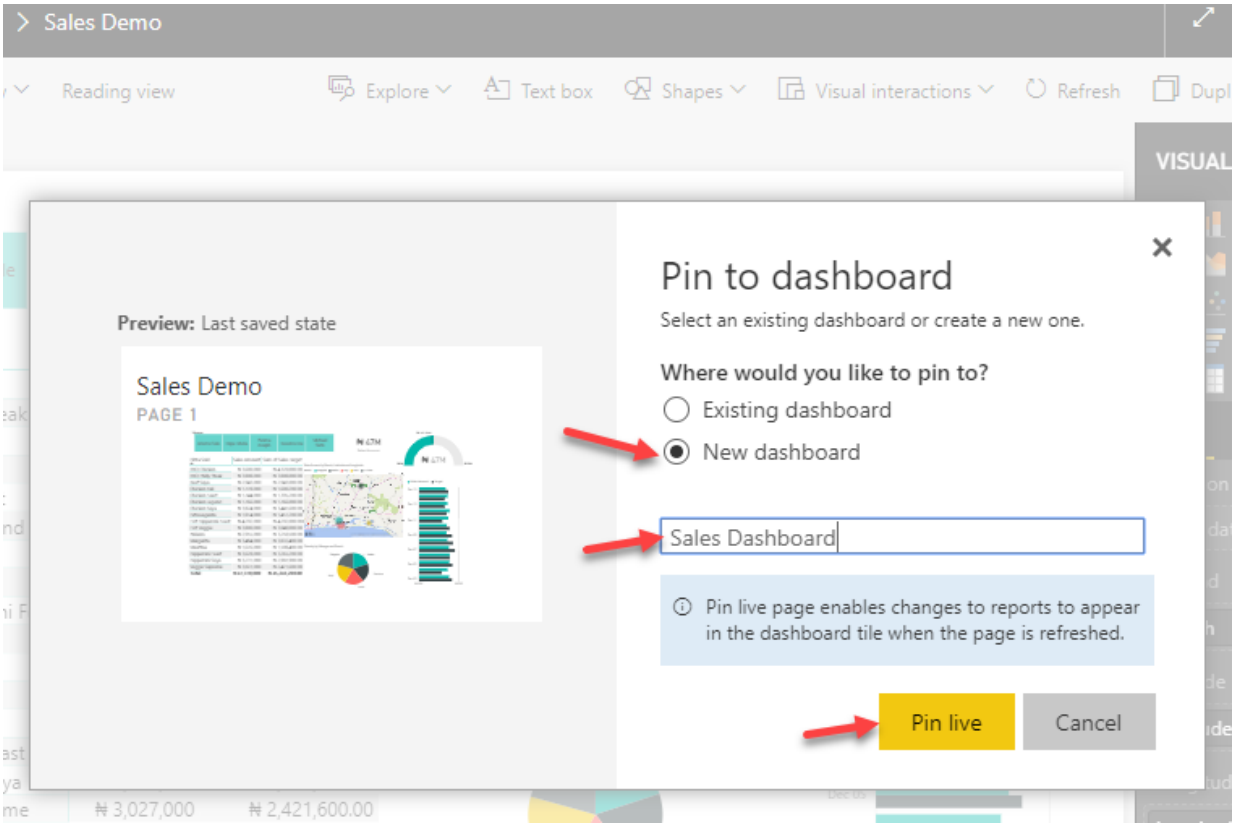
It is time we share our report with others. To do that we need to create a Dashboard and pin the visuals we want to show in that dashboard. Not to be confused, the user we share with can still access the entire report we created but the Dashboard is the first thing they see and interact with. It has extra cool features like Q&A that generates visual answers to questions, even the sharing we want to do can only be done from the Dashboard.

Just so you know, you can do the pinning that creates the dashboard from either the report view mode or the report edit mode.

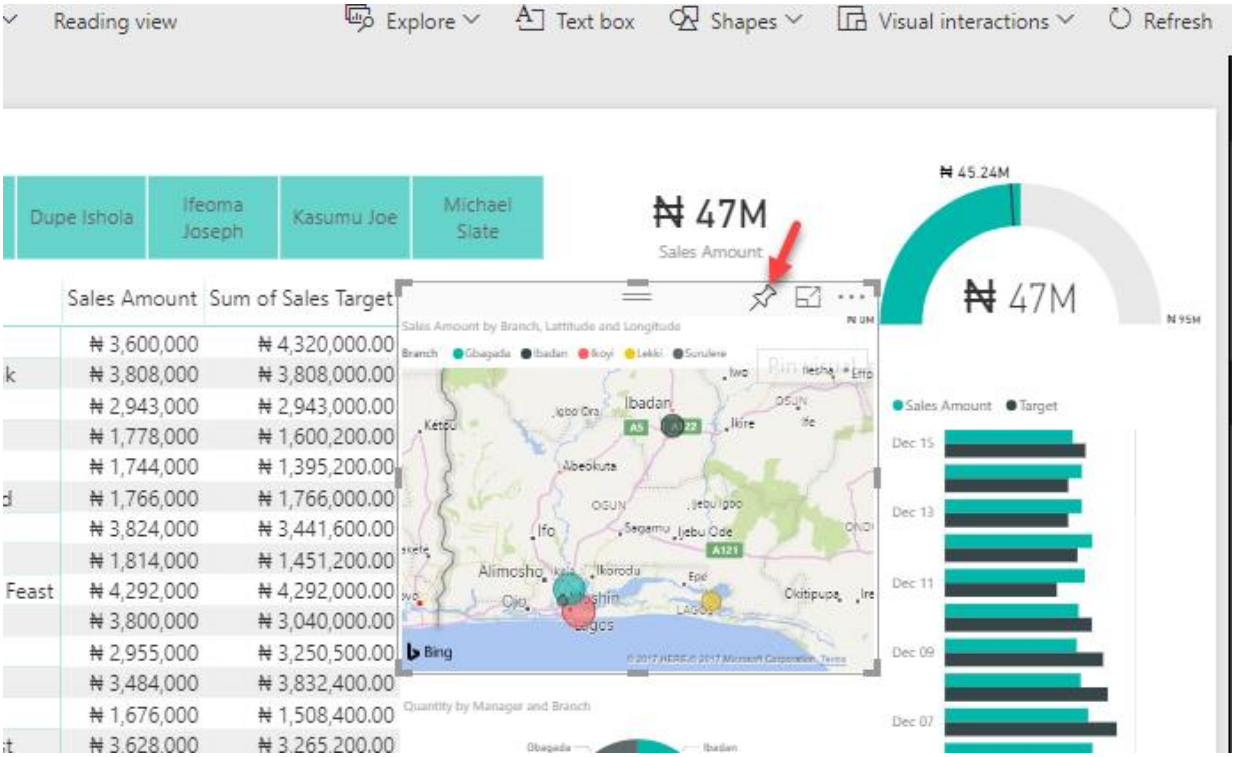
To create the dashboard, lets pin the entire report. That is called Pin Live Page and you can see it at the upper right side above the report itself.



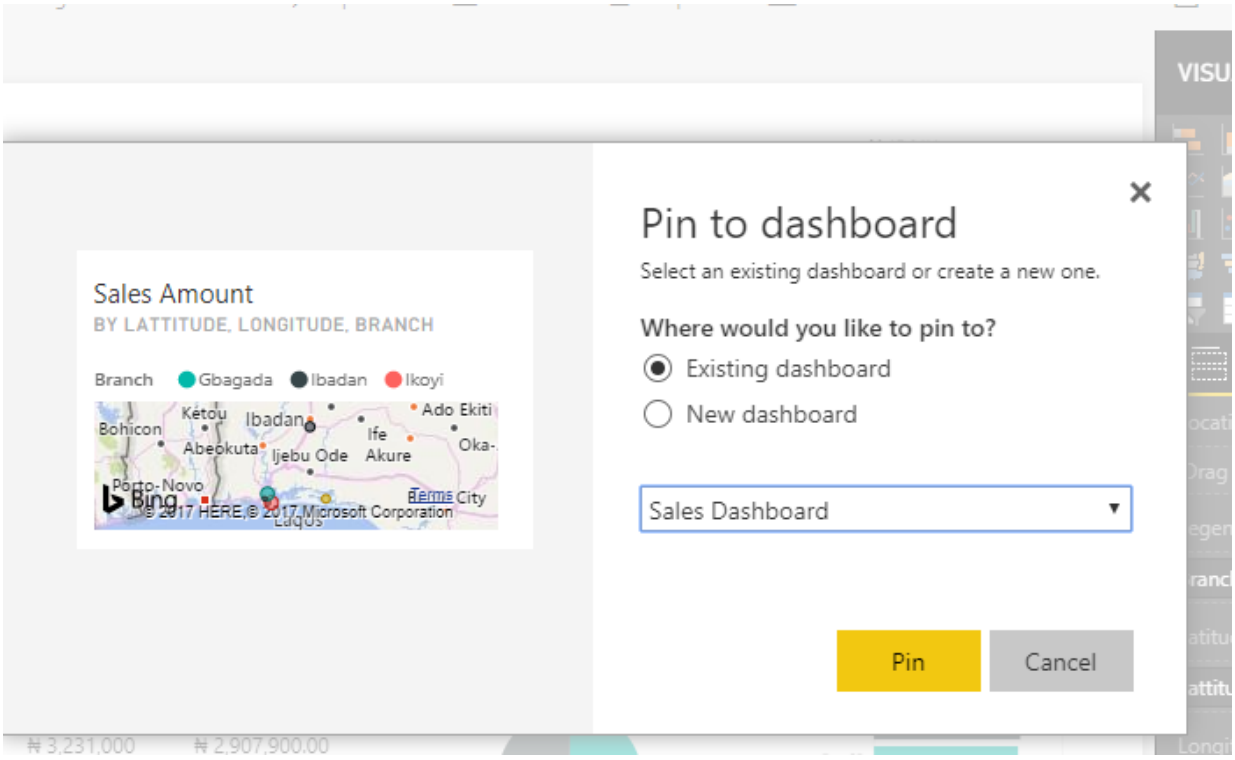
I pick New Dashboard and give it a name.

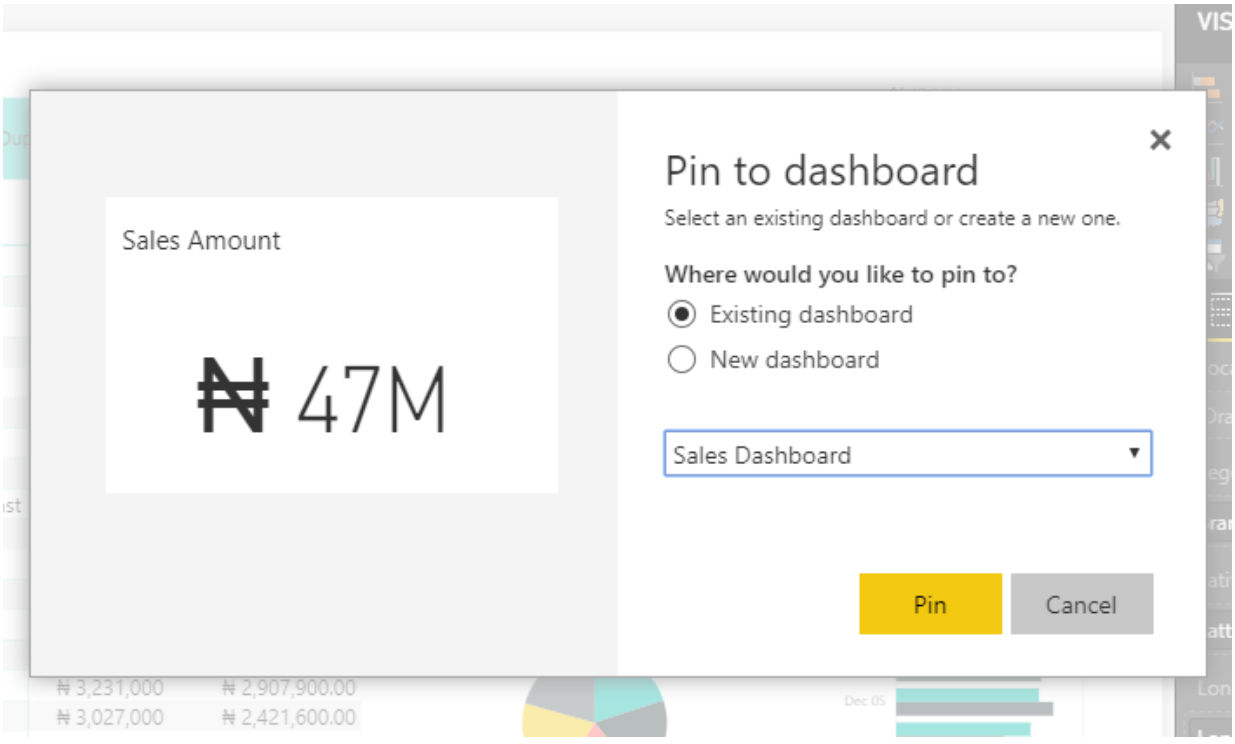


I can also pin any visual by clicking on the pin icon at the upper right edge of the visual. I will pin the map and the card.



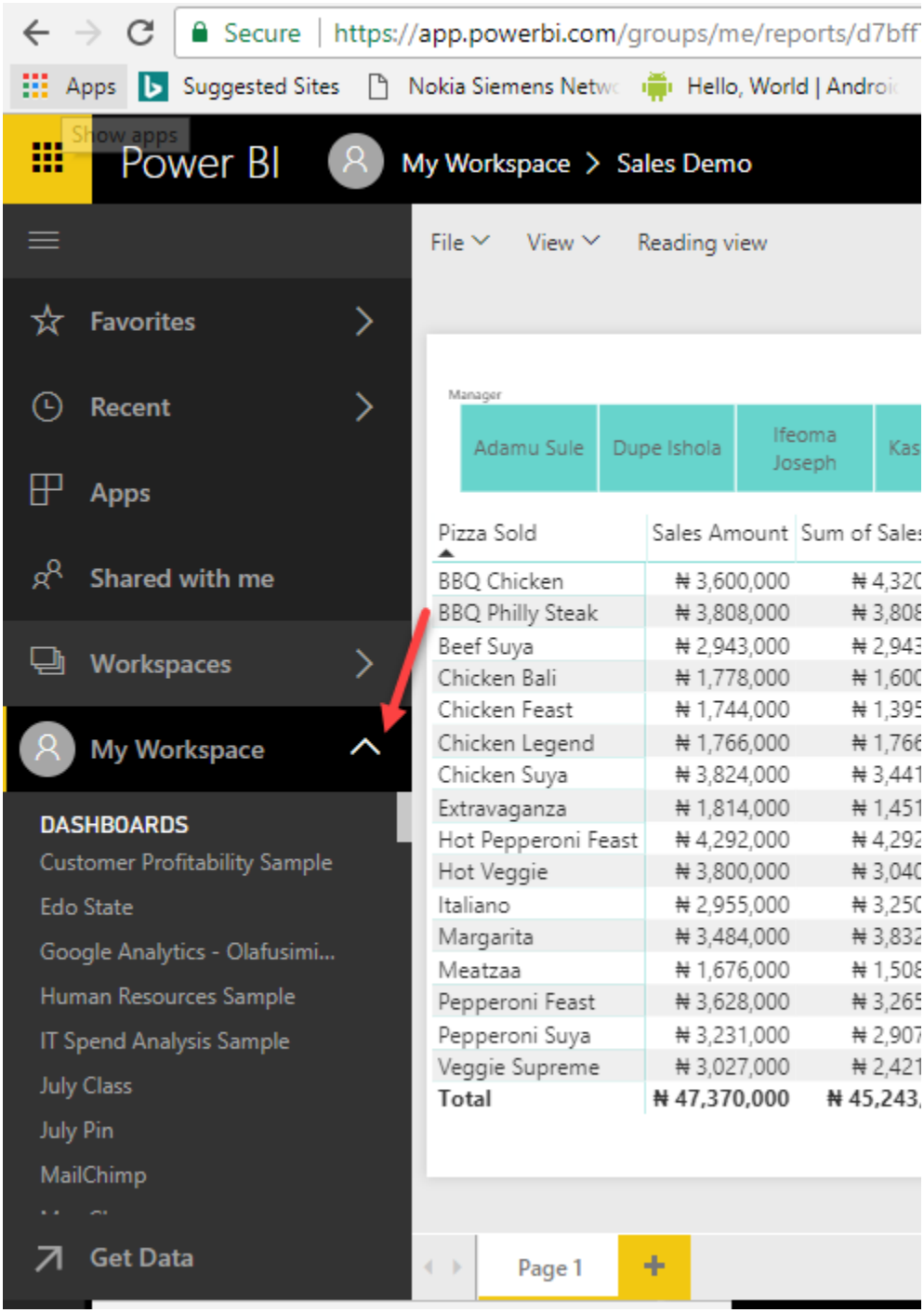
And I choose an Existing Dashboard, picking the one I already created.



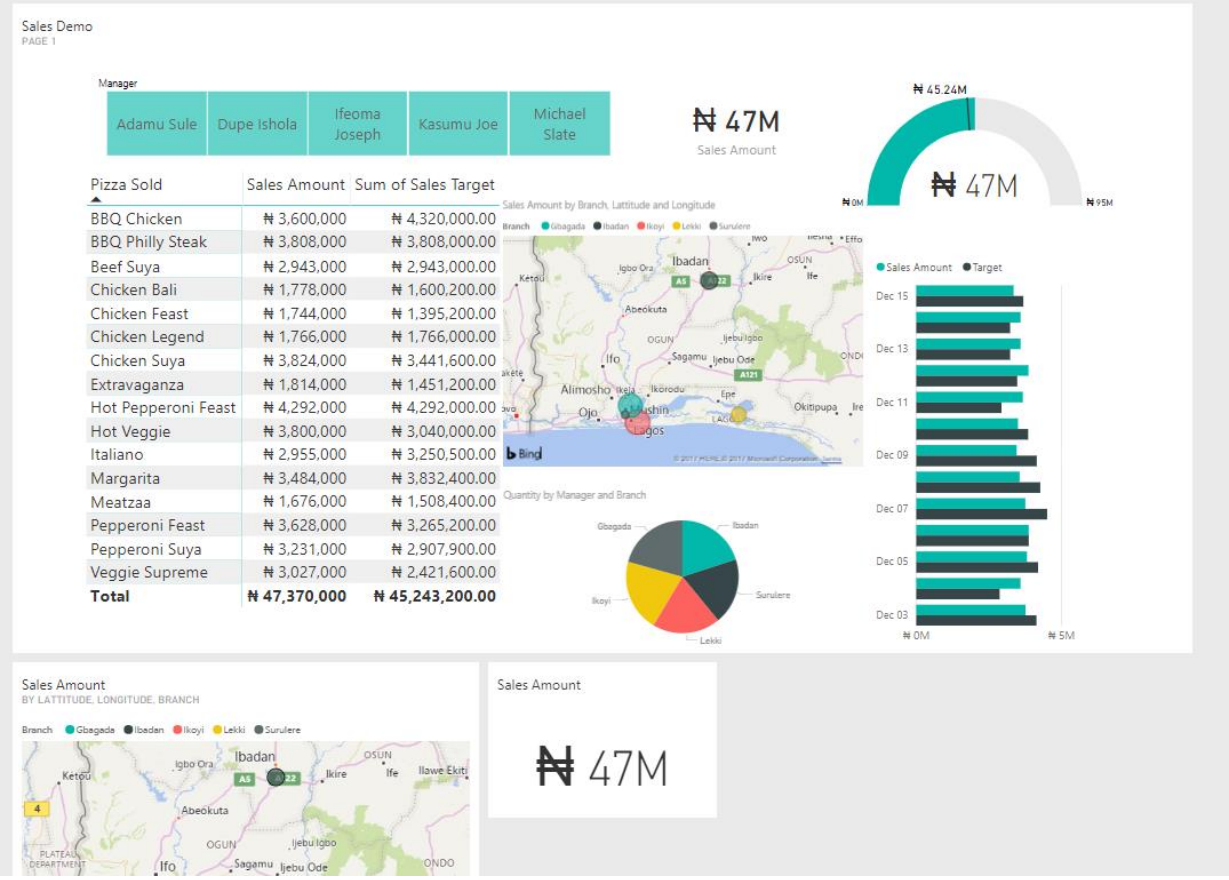


Now I can go see the Dashboard.

I expand Workspaces on the mid left and scroll to the dashboard I created.

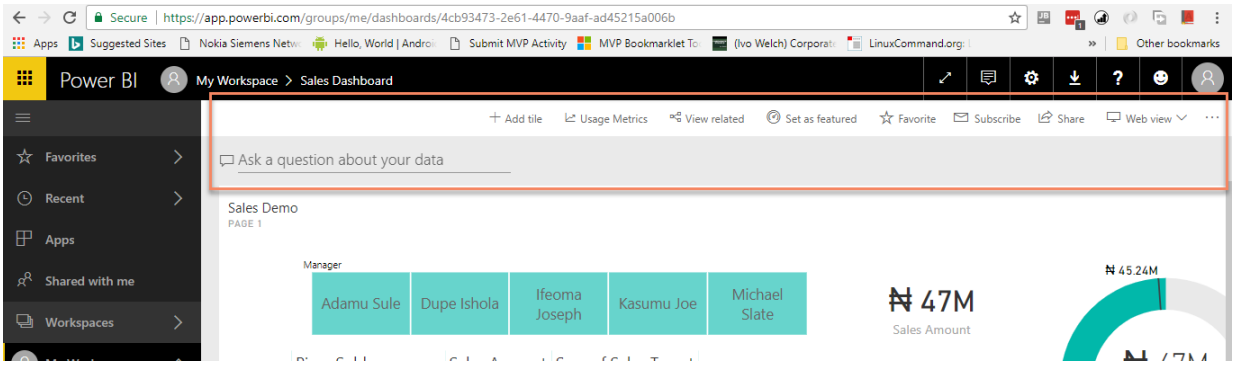


And here it is.

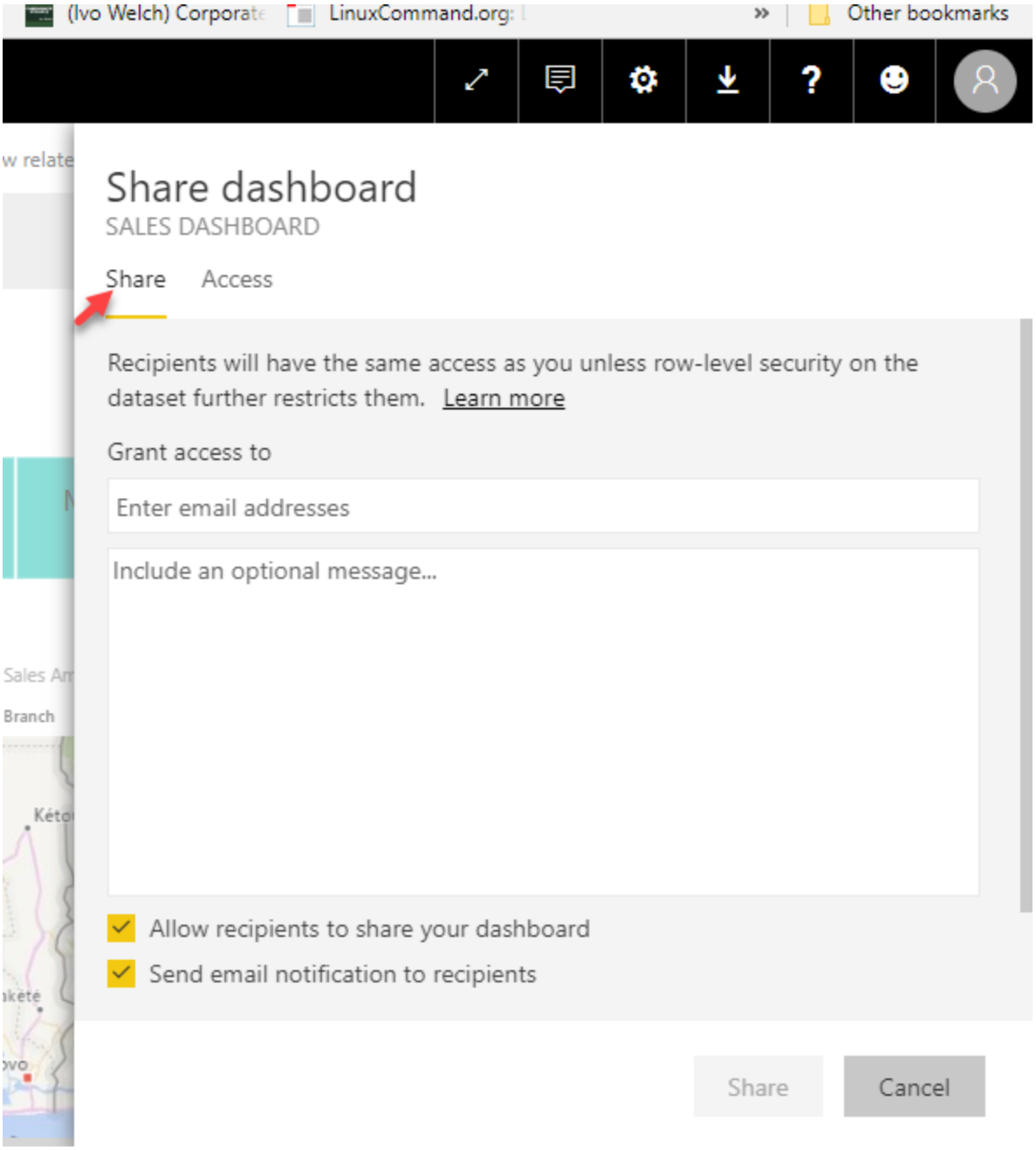


See that it has all the things I pinned. You can move the visuals around to re-arrange them and can also adjust the size.

You can see in the screenshot below, the interesting features I hinted that it has.

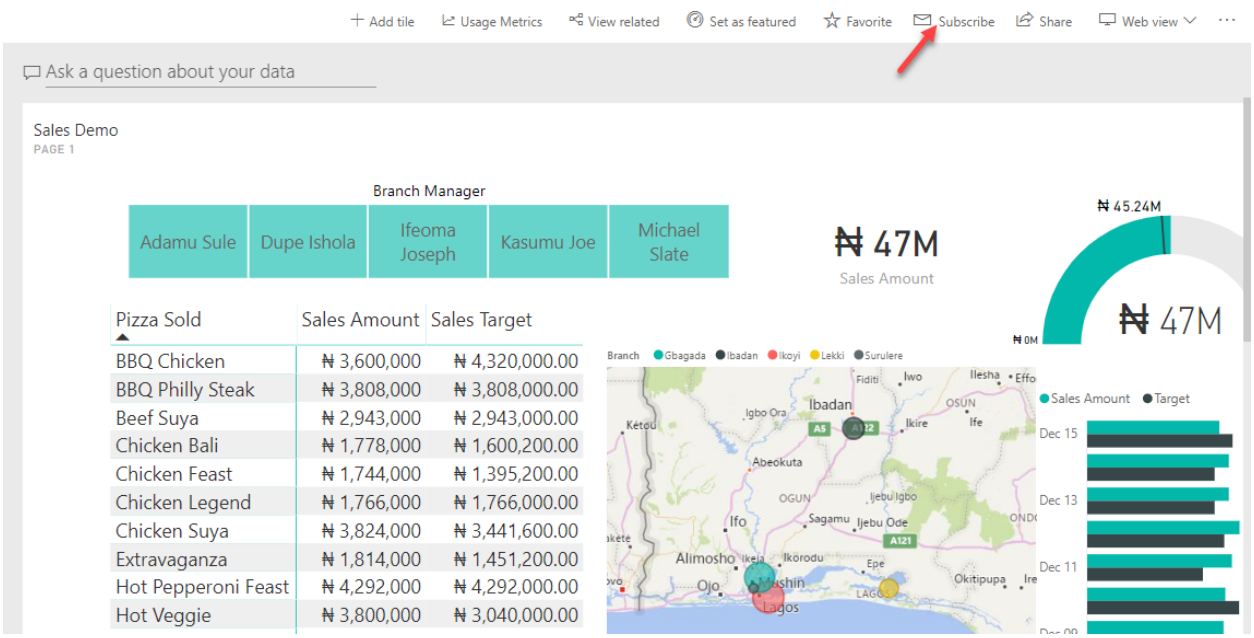


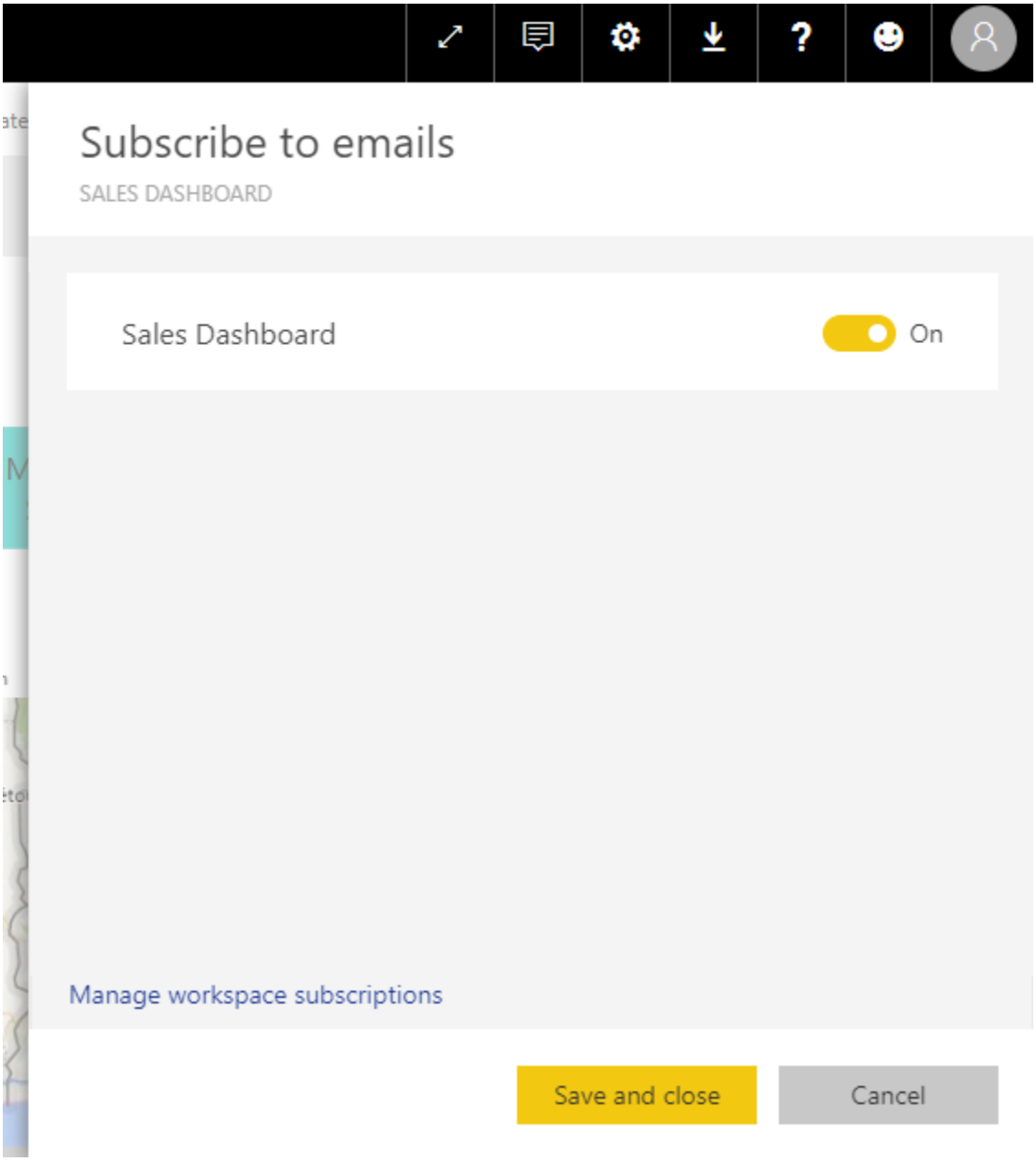
It is time we shared the report with colleagues. I simply click on Share at the upper right and enter the email of those I want to share with. Just note that you can't share with non-corporate email ids (no yahoo or gmail email addresses will be accepted by Power BI).



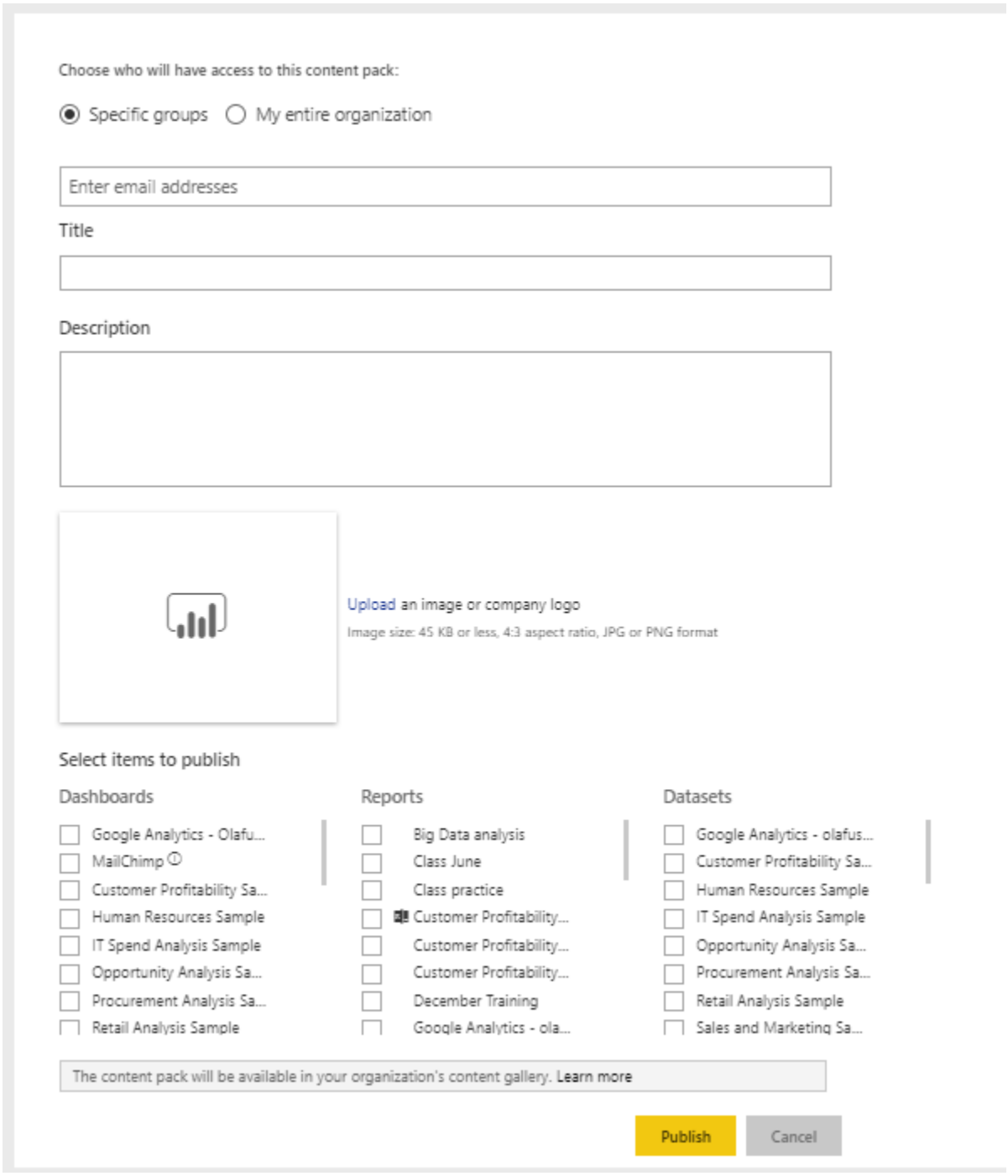
The Access tab (beside Share) allows you to remove people you've previously shared with or edit their access right.

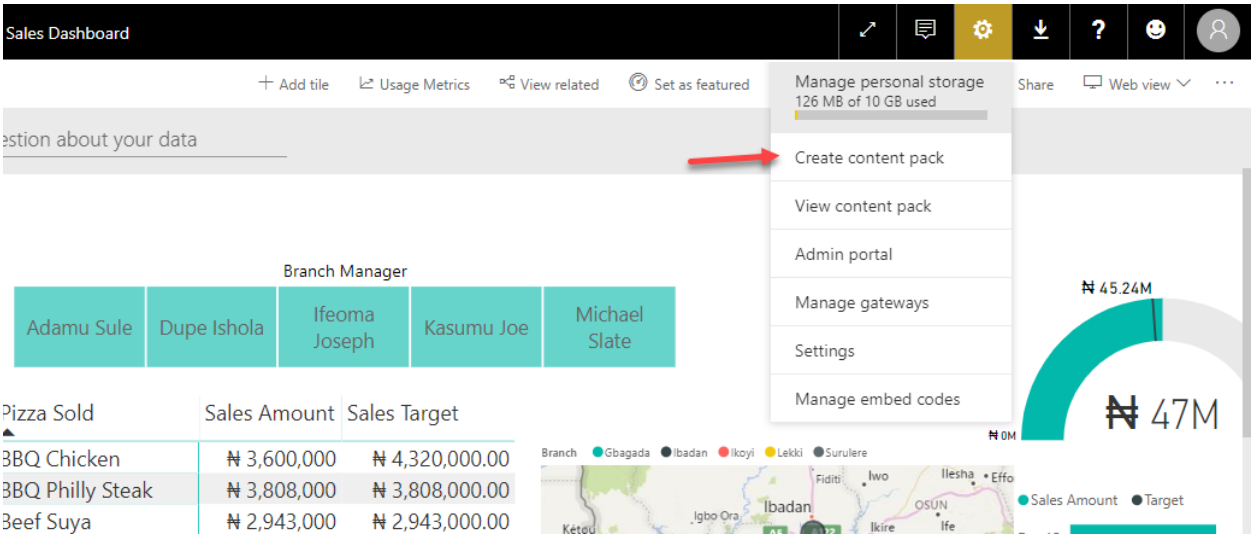
You can also subscribe to receive daily emails of the dashboard (this setting is also available on the Reports). This can be very good in replicating daily report emails to select people who still want to get email of the reports.


Add tile
Usage Metrics
View related
Set as featured
Favorite
Subscribe
Share
Web view
Ask a question about your data
Sales Demo
PAGE 1
Branch Manager
Adamu Sule
Dupe Ishola
Ifeoma Joseph
Kasumu Joe
Michael Slate
₦ 47M
Sales Amount
₦ 45.24M
₦ 0M
₦ 47M
Pizza Sold
Sales Amount
Sales Target
BBQ Chicken ₦ 3,600,000 ₦ 4,320,000.00
BBQ Philly Steak ₦ 3,808,000 ₦ 3,808,000.00
Beef Suya ₦ 2,943,000 ₦ 2,943,000.00
Chicken Bali ₦ 1,778,000 ₦ 1,600,200.00
Chicken Feast ₦ 1,744,000 ₦ 1,395,200.00
Chicken Legend ₦ 1,766,000 ₦ 1,766,000.00
Chicken Suya ₦ 3,824,000 ₦ 3,441,600.00
Extravaganza ₦ 1,814,000 ₦ 1,451,200.00
Hot Pepperoni Feast ₦ 4,292,000 ₦ 4,292,000.00
Hot Veggie ₦ 3,800,000 ₦ 3,040,000.00
Branch
Gbagada
Ibadan
Ikoyi
Lekki
Surulere
Ibadan
Abeokuta
Ifo
Alimosho
Ojo
Lagos
Sagamu
Ijebu Ode
Ikorodu
Epe
Okitipupa
Sales Amount
Target
Dec 15
Dec 13
Dec 11

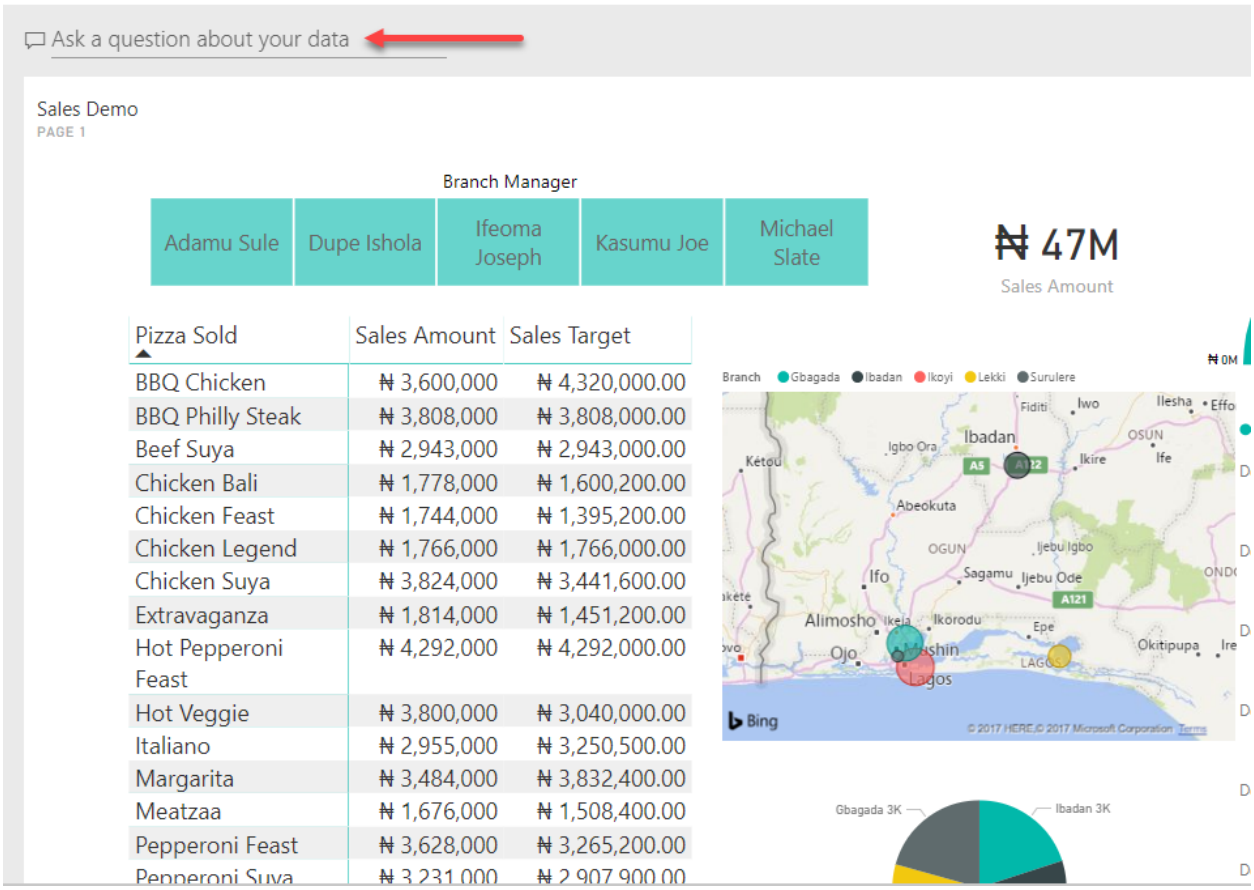


You can also publish the entire dashboard, report and dataset as a content pack, or just the report and dataset, or just the dataset.

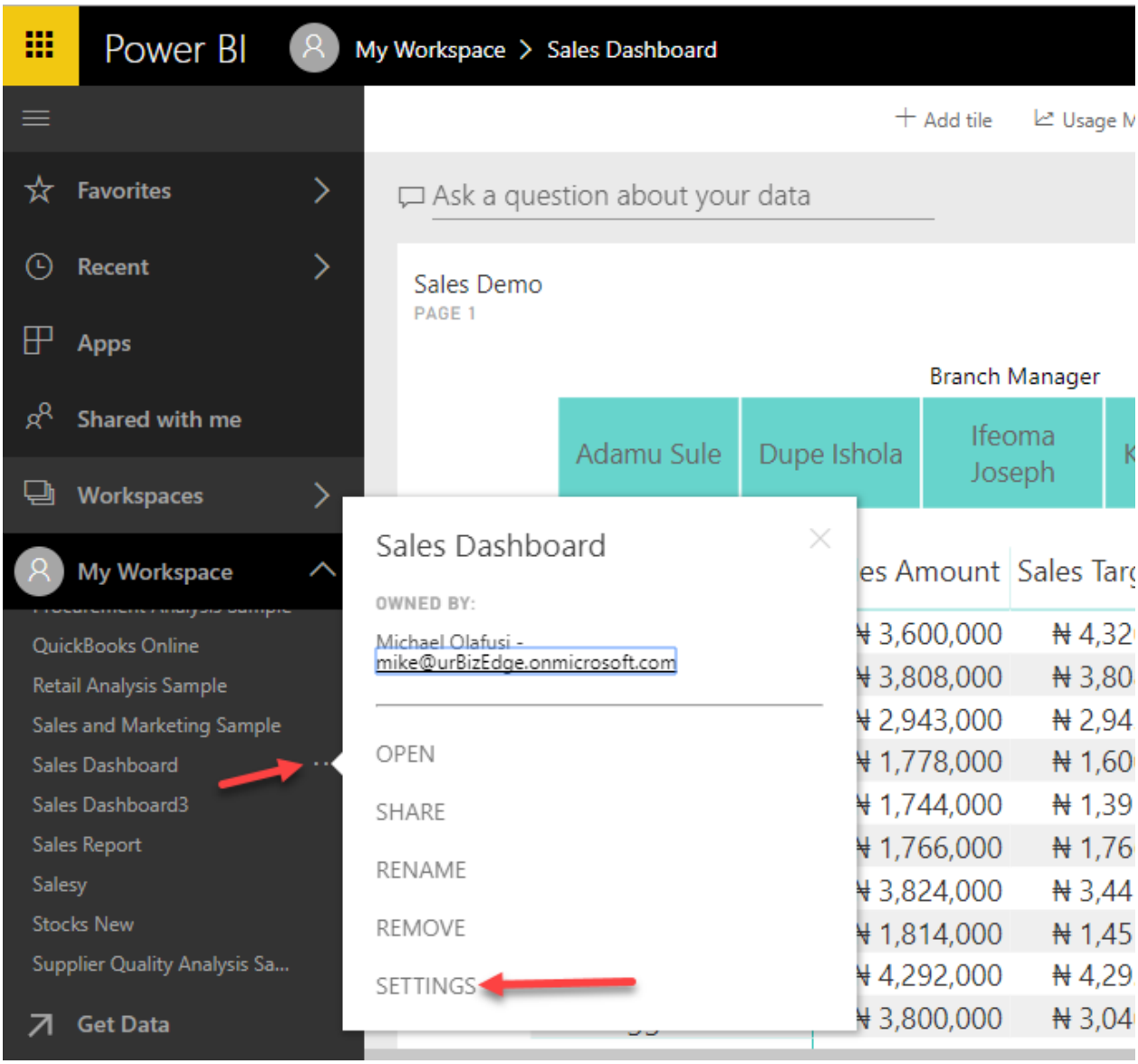

Choose who will have access to this content pack:
Specific groups
My entire organization
Enter email addresses
Title
Description
Upload an image or company logo
Image size: 45 KB or less, 4:3 aspect ratio, JPG or PNG format
Select items to publish
Dashboards
Google Analytics - Olafu...
MailChimp
Customer Profitability Sa...
Human Resources Sample
IT Spend Analysis Sample
Opportunity Analysis Sa...
Procurement Analysis Sa...
Retail Analysis Sample
Reports
Big Data analysis
Class June
Class practice
Customer Profitability...
Customer Profitability...
Customer Profitability...
December Training
Google Analytics - ola...
Datasets
Google Analytics - olafus...
Customer Profitability Sa...
Human Resources Sample
IT Spend Analysis Sample
Opportunity Analysis Sa...
Procurement Analysis Sa...
Retail Analysis Sample
Sales and Marketing Sa...
The content pack will be available in your organization's content gallery. Learn more
Publish
Cancel



Let's try out the Q&A. Ask it to show you Sales Amount by branch as bar chart

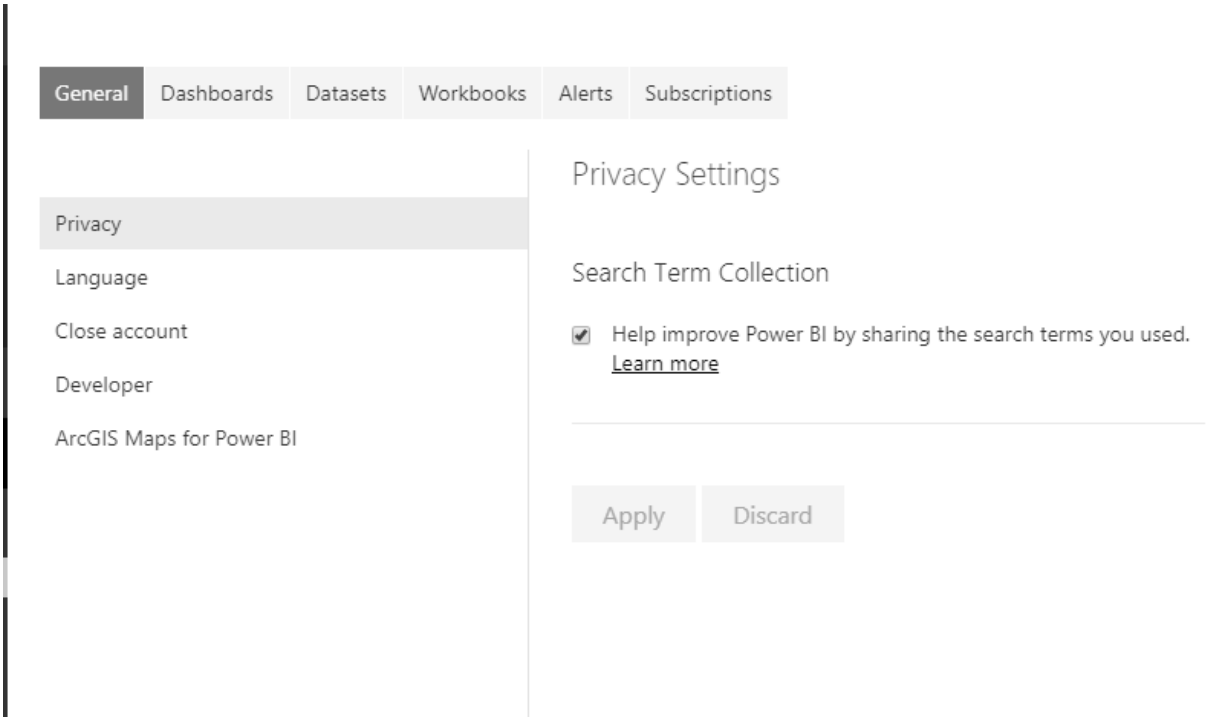


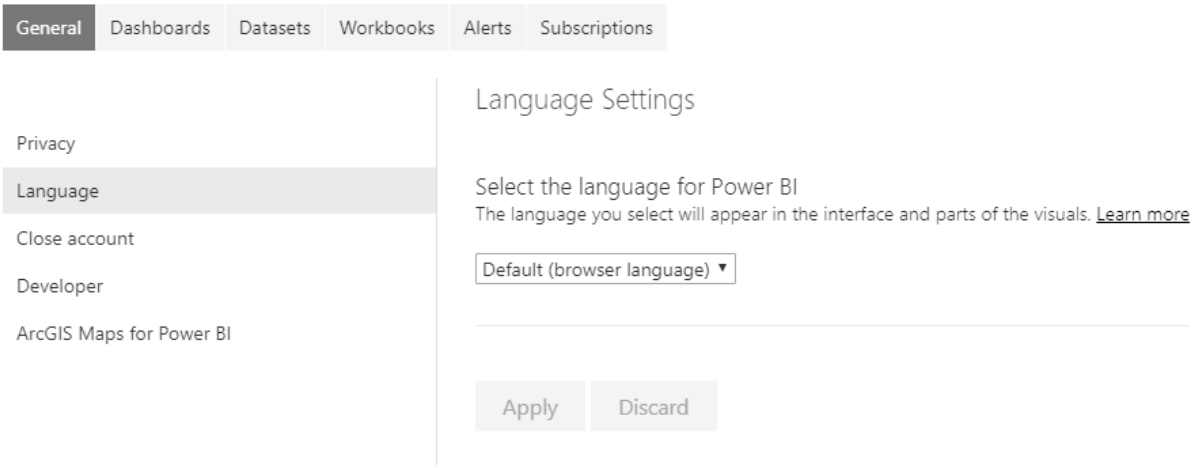
Lastly, let me take you through all the settings available for the report and dashboard you have just created. To the right of the dashboard name, click on the ellipsis (three dots), then click on Settings.

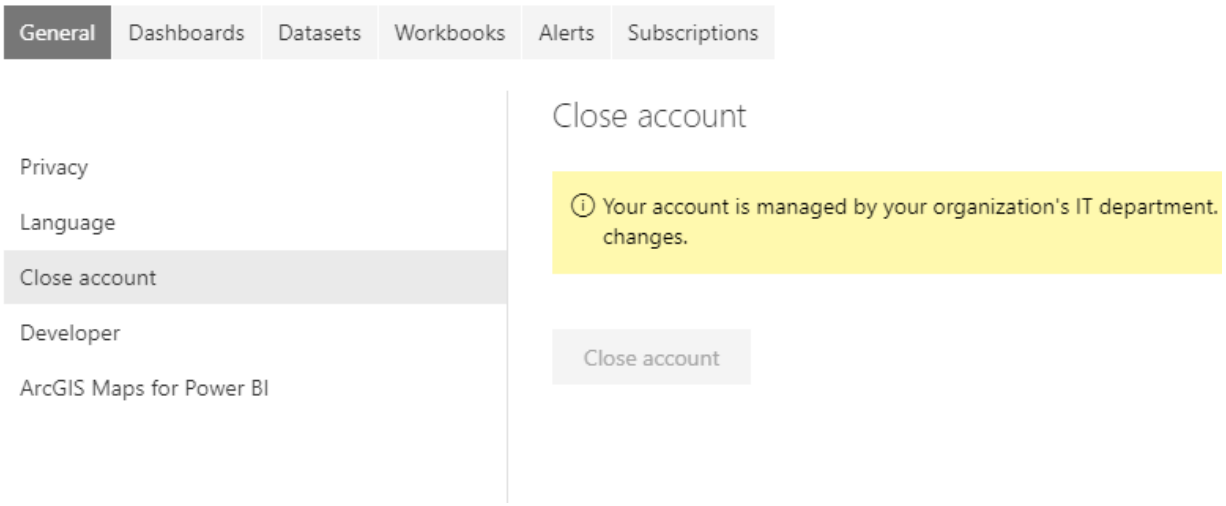


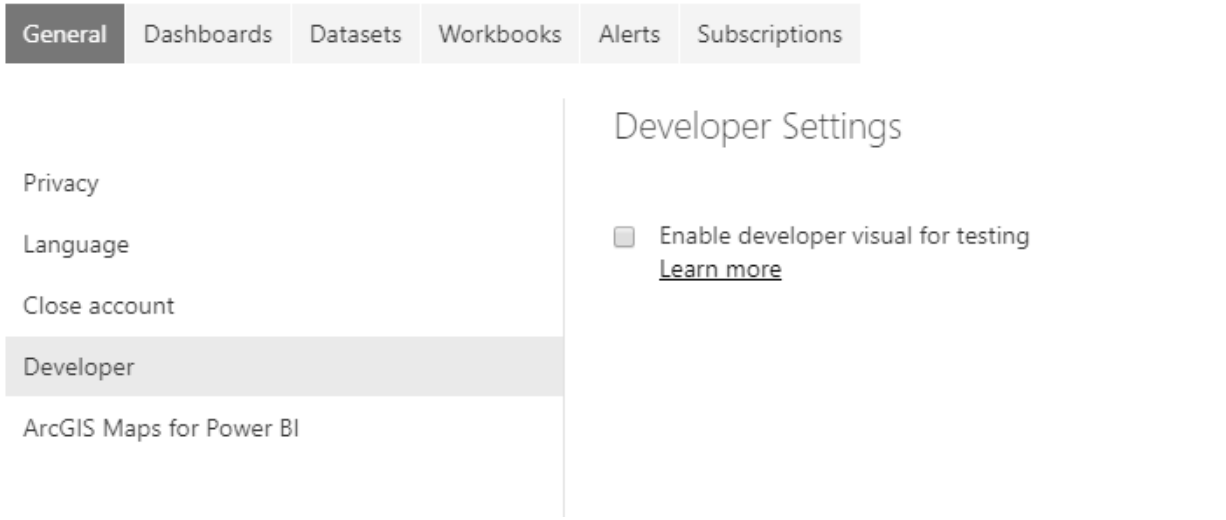
In the page that will come up, you will see all the settings that control how you consume the reports from automatic scheduling of refresh to update the reports with new data without your manual intervention to sending you an email notification when a the report has been refreshed (data updated).

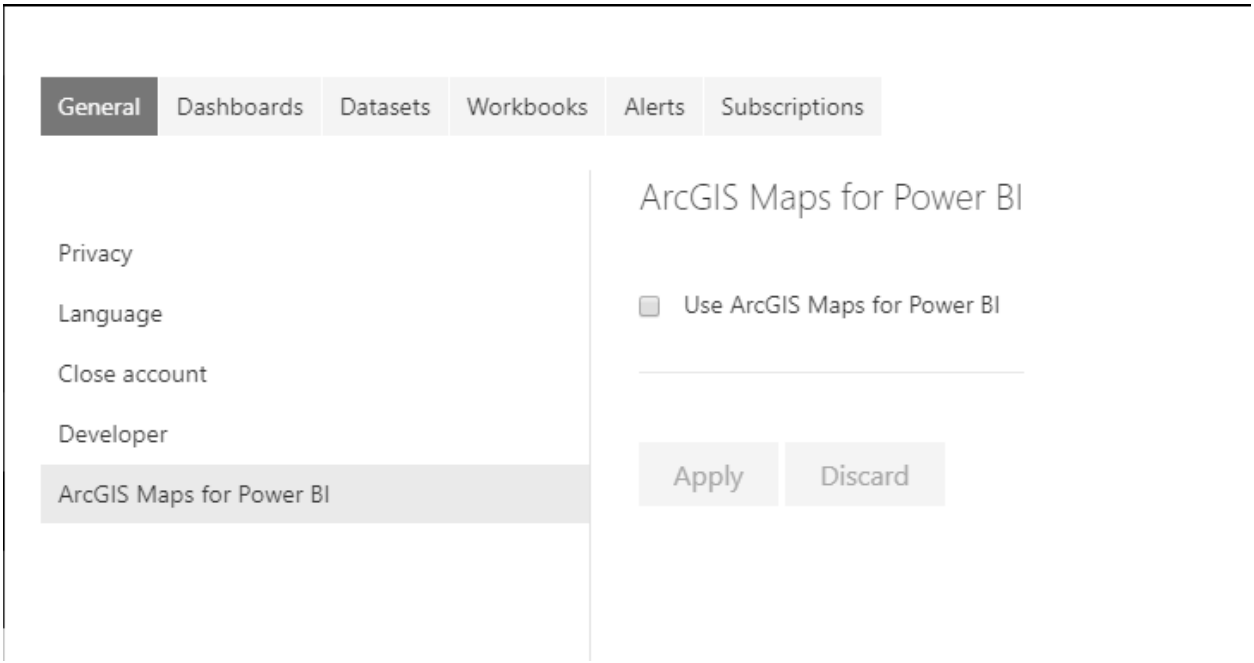
The first settings tab is General. Allows you to set privacy – whether to allow Microsoft get performance log from you or not. And Language, account closure, enable developer mode for coding custom visuals and enable ArcGIS Maps for Power BI.


General
Dashboards
Datasets
Workbooks
Alerts
Subscriptions
Privacy
Language
Close account
Developer
ArcGIS Maps for Power BI
Privacy Settings
Search Term Collection
Help improve Power BI by sharing the search terms you used.
Learn more
Apply
Discard


General
Dashboards
Datasets
Workbooks
Alerts
Subscriptions
Privacy
Language
Close account
Developer
ArcGIS Maps for Power BI
Language Settings
Select the language for Power BI
The language you select will appear in the interface and parts of the visuals. Learn more
Default (browser language)
Apply
Discard

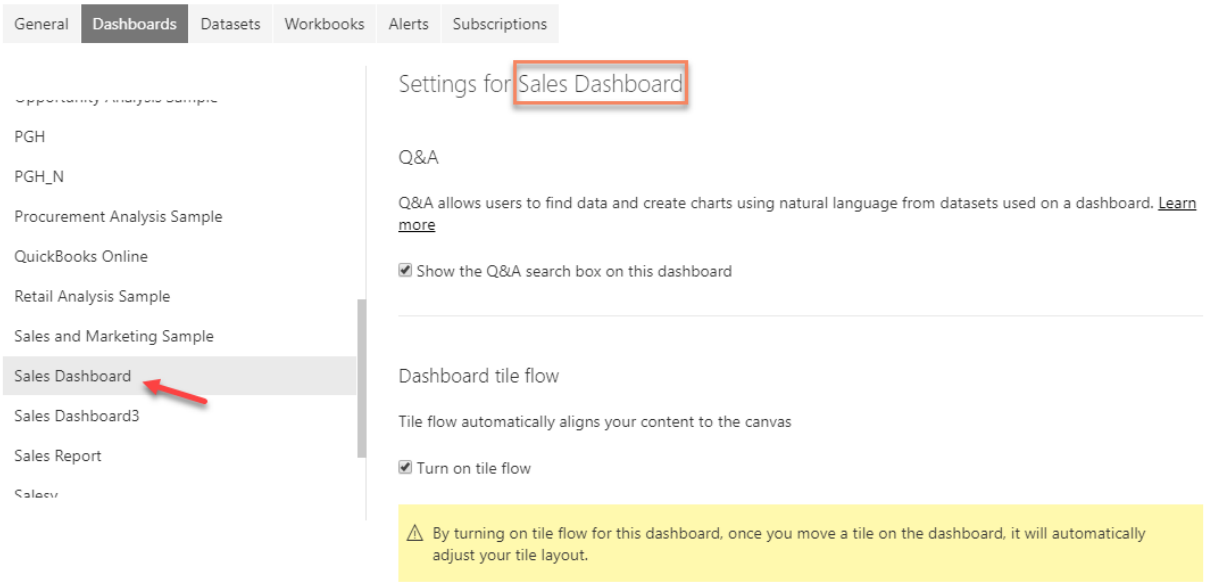

General
Dashboards
Datasets
Workbooks
Alerts
Subscriptions
Privacy
Language
Close account
Developer
ArcGIS Maps for Power BI
Close account
Your account is managed by your organization's IT department.
changes.
Close account


General
Dashboards
Datasets
Workbooks
Alerts
Subscriptions
Privacy
Language
Close account
Developer
ArcGIS Maps for Power BI
Developer Settings
Enable developer visual for testing
Learn more



The second settings tab is Dashboards. It allows you to set whether to enable Q&A and Dashboard tile flow (automatic adjusting of the visuals shape and size based on the screen size of the device you are using to access the dashboard).

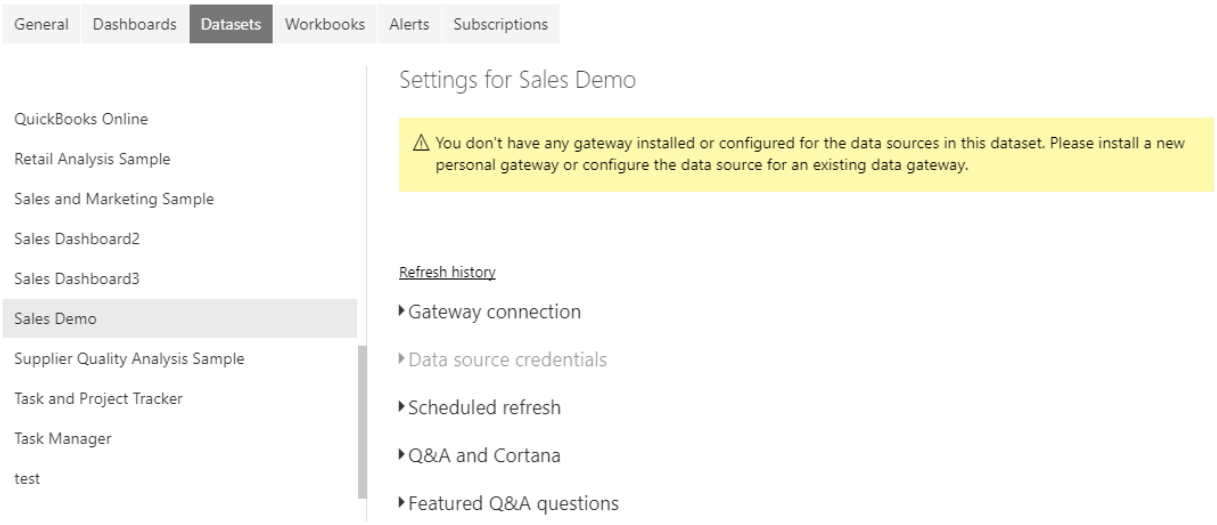
It is good to make sure that you are configuring the settings for the right dashboard.


General
Dashboards
Datasets
Workbooks
Alerts
Subscriptions
PGH
PGH_N
Procurement Analysis Sample
QuickBooks Online
Retail Analysis Sample
Sales and Marketing Sample
Sales Dashboard
Sales Dashboard3
Sales Report
Settings for Sales Dashboard
Q&A
Q&A allows users to find data and create charts using natural language from datasets used on a dashboard. Learn more
Show the Q&A search box on this dashboard
Dashboard tile flow
Tile flow automatically aligns your content to the canvas
Turn on tile flow
By turning on tile flow for this dashboard, once you move a tile on the dashboard, it will automatically adjust your tile layout.

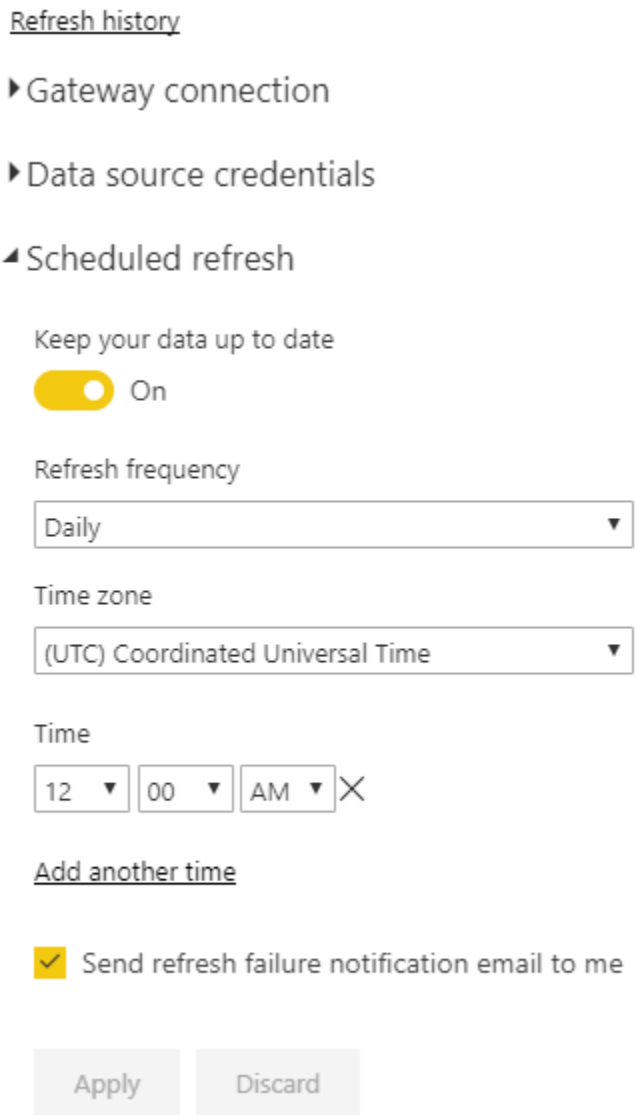
The third settings tab is Datasets. It allows you to schedule refresh which depends on you manually setting gateway connection if your datasets are not on a cloud or publicly accessible datasource/database. You will notice a yellow warning notice

saying that you've not configured a data gateway for the data sources you used (this is because the Excel files we used as the data source are locally saved on our PC and not from a cloud or internet data source).

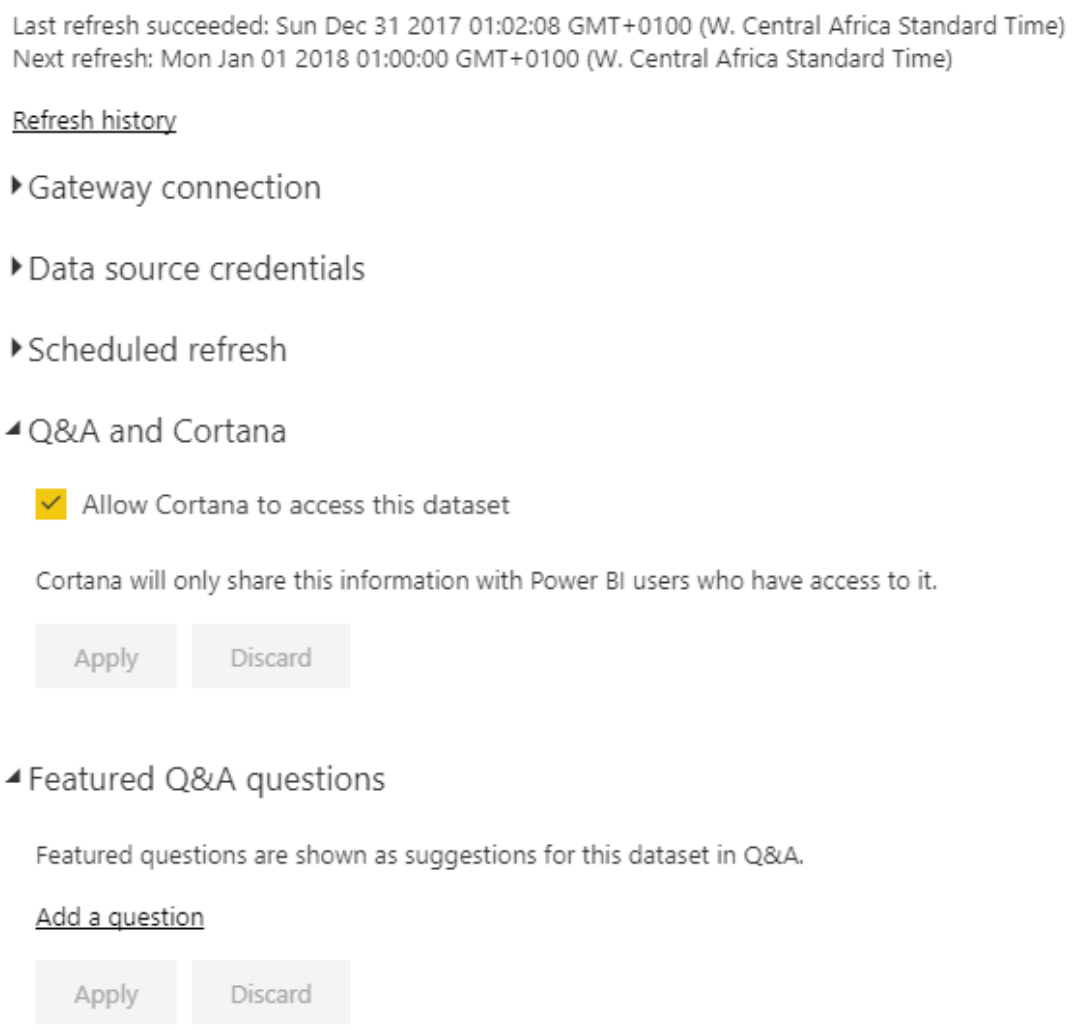
`



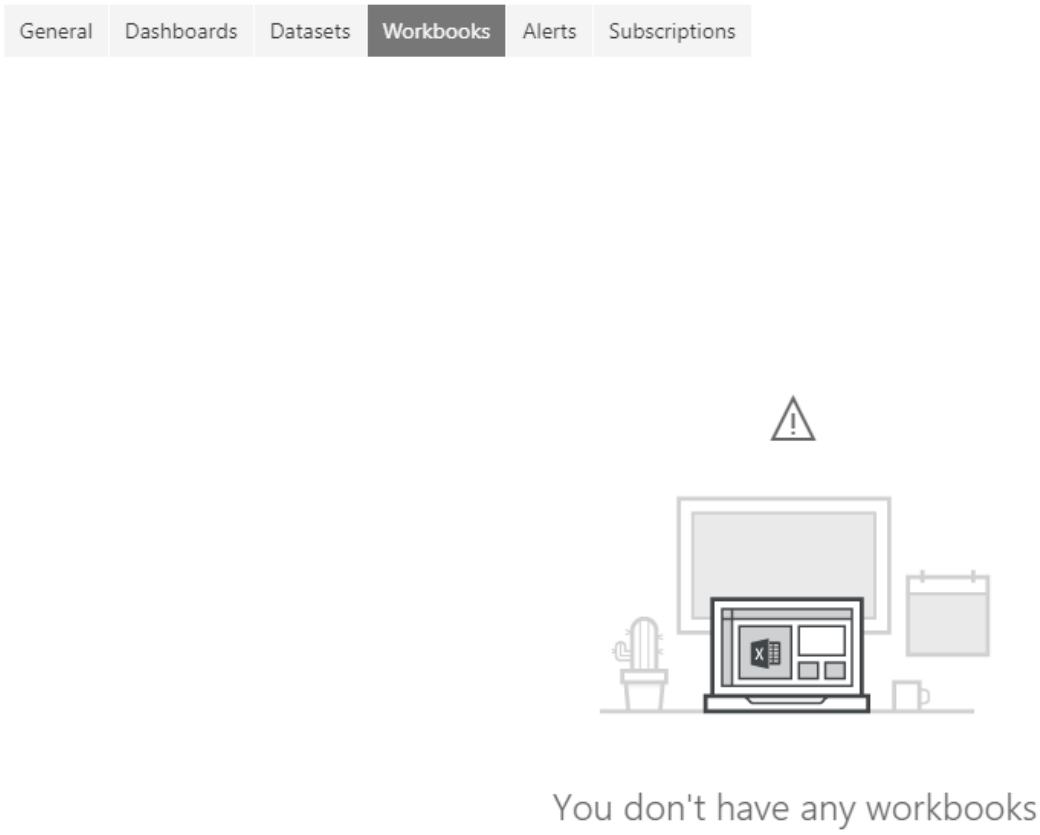
Once you configure a data gateway on your PC and register the Excel files as data sources housed in that gateway, the warning will go off and you can set the scheduled refresh.



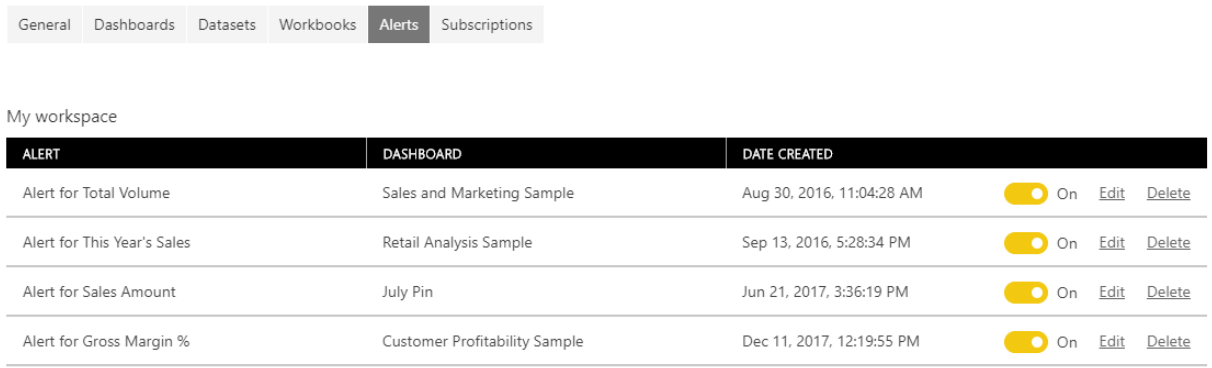
You can allow Cortana to access your datasets relying on the Q&A feature of Power BI. Also, you can preset some Q&A questions.


Last refresh succeeded: Sun Dec 31 2017 01:02:08 GMT+0100 (W. Central Africa Standard Time)
Next refresh: Mon Jan 01 2018 01:00:00 GMT+0100 (W. Central Africa Standard Time)
Refresh history
Gateway connection
Data source credentials
Scheduled refresh
Q&A and Cortana
Allow Cortana to access this dataset
Cortana will only share this information with Power BI users who have access to it.
Apply
Discard
Featured Q&A questions
Featured questions are shown as suggestions for this dataset in Q&A.
Add a question
Apply
Discard

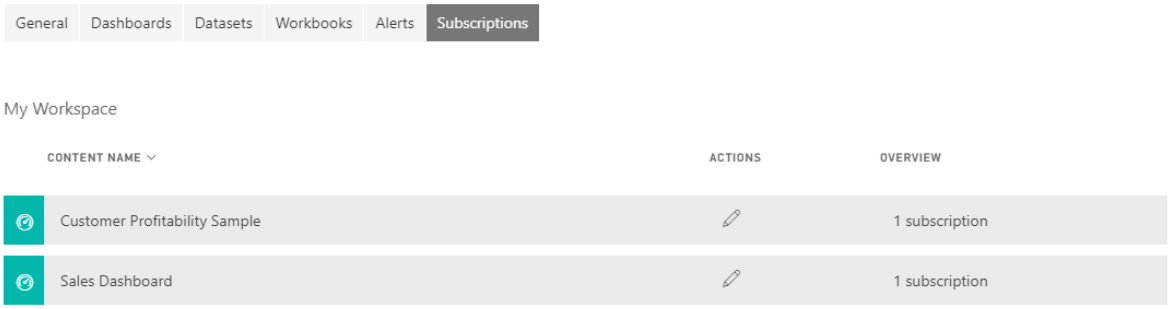
The fourth settings tab is Workbooks. Power BI allows you to import Excel files as Workbooks. This is only possible from the web Power BI service.



The fifth settings tab is Alerts. It allows you manage the triggers you've set regarding some metrics/values reaching a threshold figure.



The last settings tab is Subscriptions. It allows you manage the email subscriptions you have to existing dashboards so that you get a daily notification once the dataset (ultimately, the report and dashboard) is refreshed (usually indicating new data added).

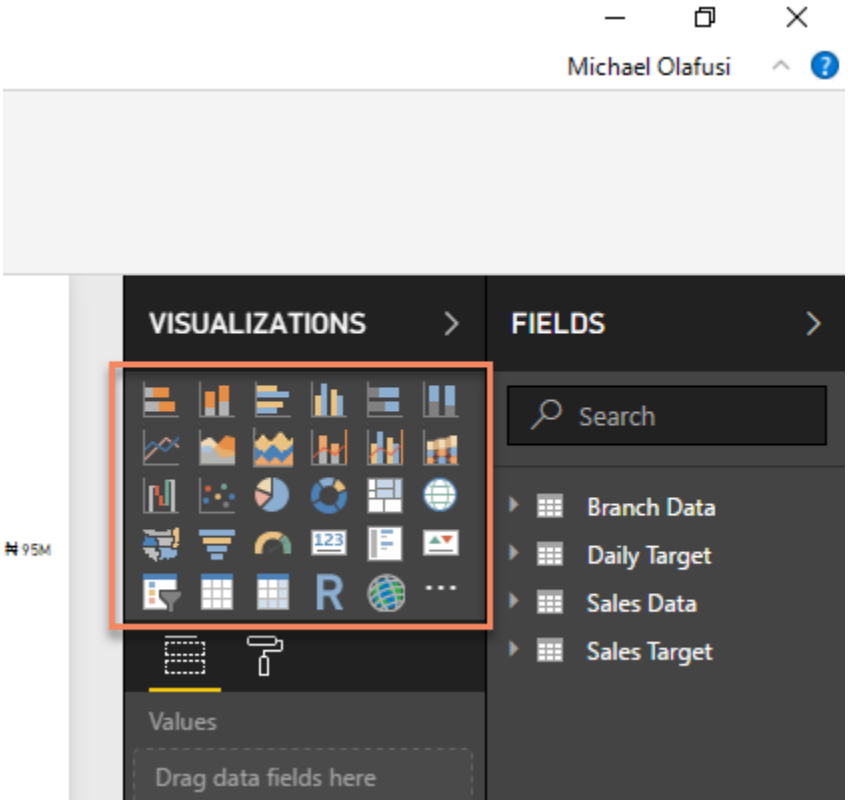


And so we have come to the end of our sample sales analysis report in Power BI.

Again, you can download the practice along files at
https://urbizedge.blob.core.windows.net/urbizedge/Branch-Data.xlsx
https://urbizedge.blob.core.windows.net/urbizedge/Daily-Sales-Target.xlsx
https://urbizedge.blob.core.windows.net/urbizedge/Sales-Data.xlsx
https://urbizedge.blob.core.windows.net/urbizedge/Sales-Target.xlsx

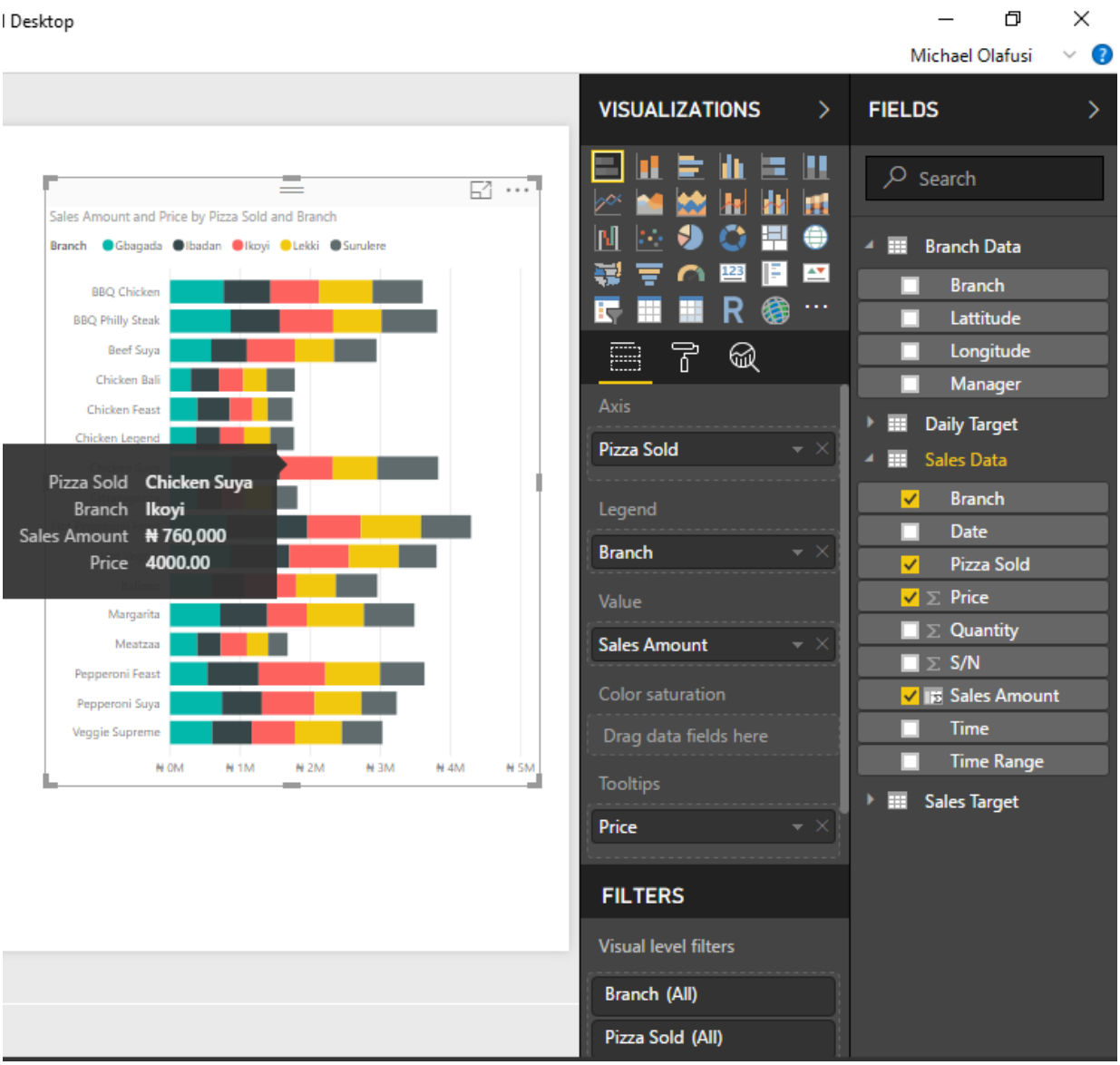
Power BI Visuals

Power BI visuals are the actual elements — tables, charts, filters/slicers, maps, etc — that present the data in your report. By default, Power BI comes with 29 visuals.

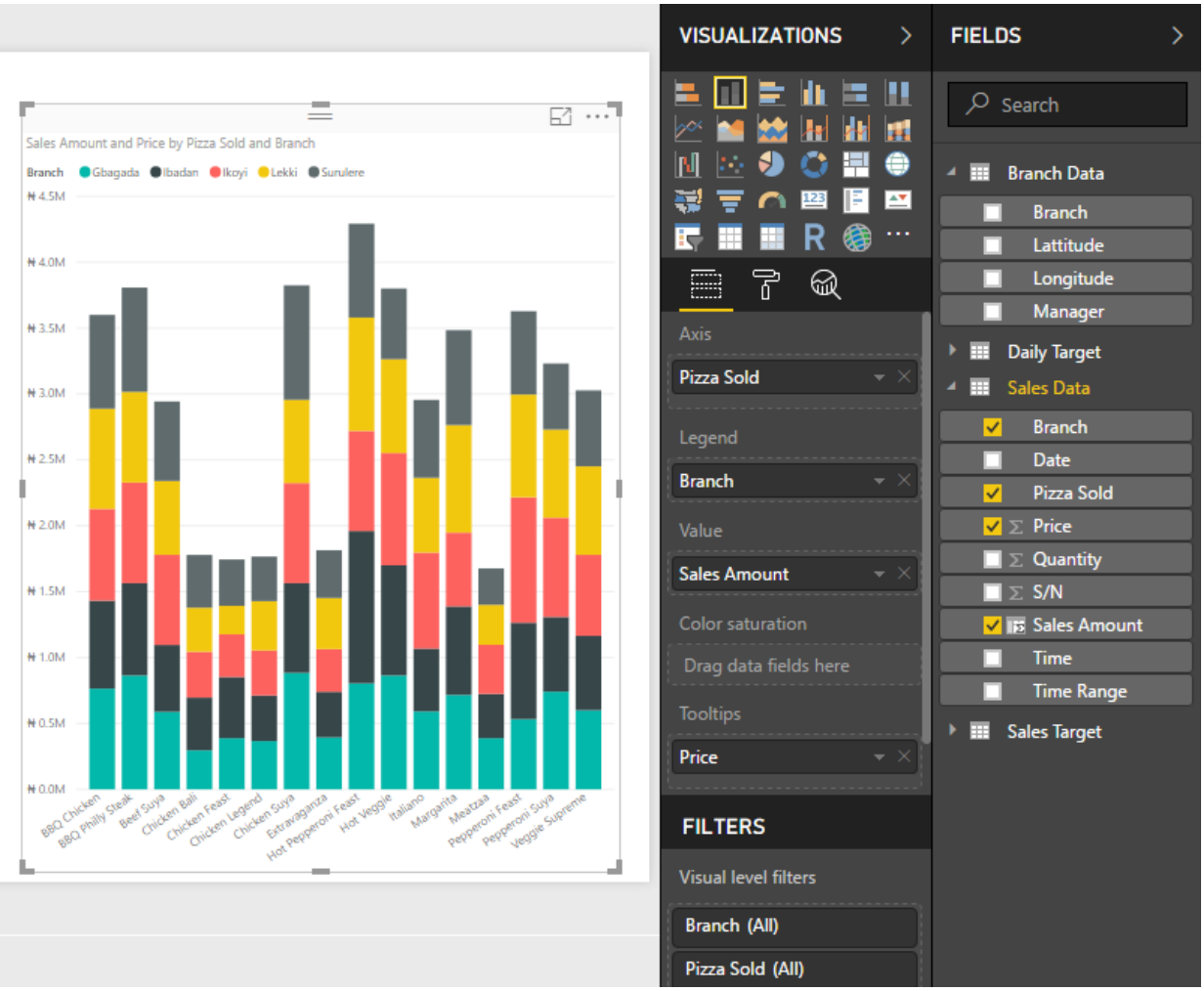


They are:

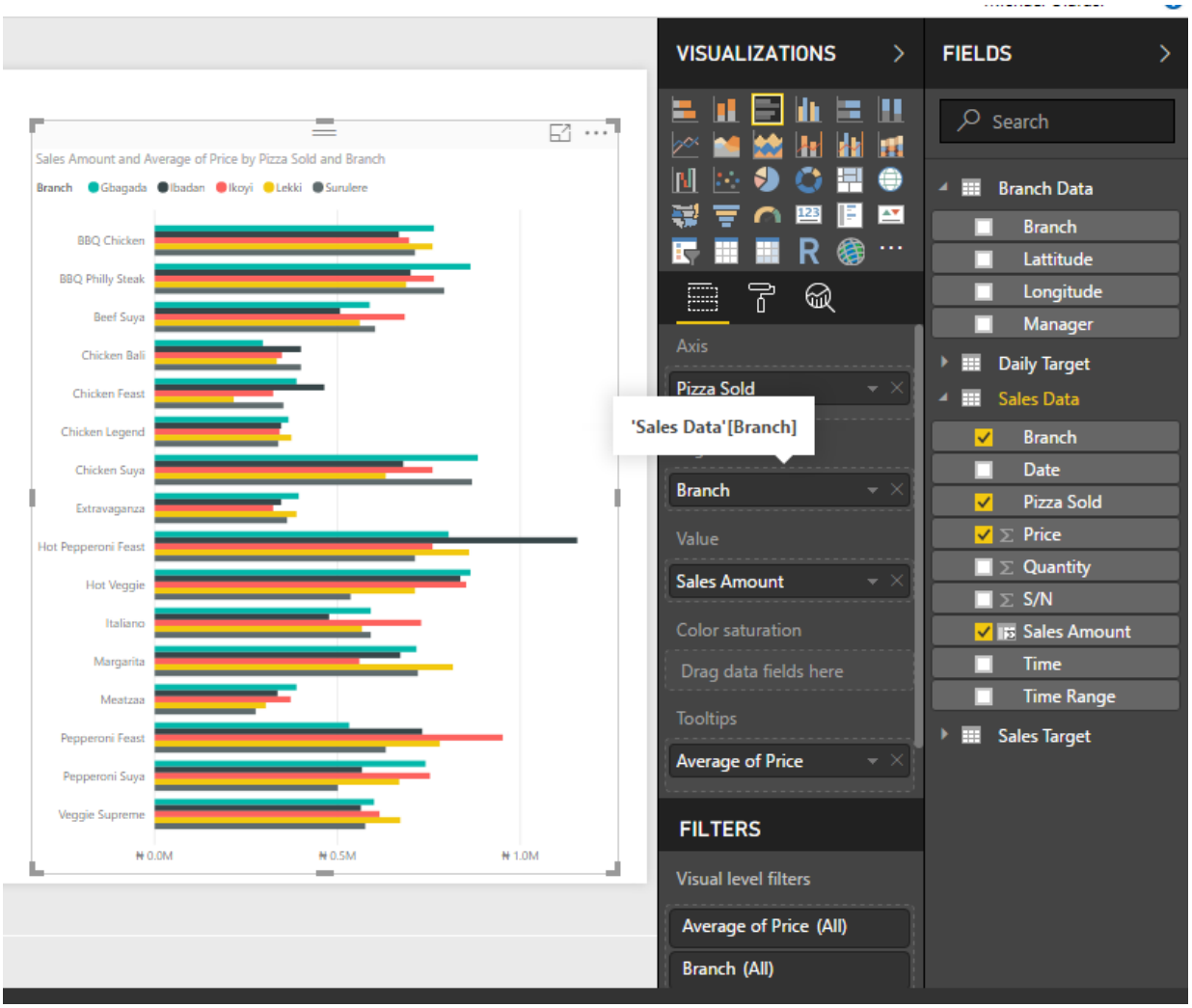
1. **Stacked Bar Chart:** This allows you to create a bar chart with the breakdowns (field in legend) stacked on top of each other. It can be used to show total sales with breakdown by products or region. It has five components — Axis (where you put the field that should have separate bars, like date), Legend (where you put the field to stack one on another for each category in the axis, e.g. products or regions; anything you drag into Legend comes out with different colors), Value (where you put the field with the figures you want to plot), Color Saturation (allows you to represent the values in a field on a light to dark color intensity on the plotted value bars. You can't use it and Legend together. A likely use will be to show volume/quantity of products sold while the bar values present the sales amount), and Tooltips (allows you to show extra details, like price per unit of the product).



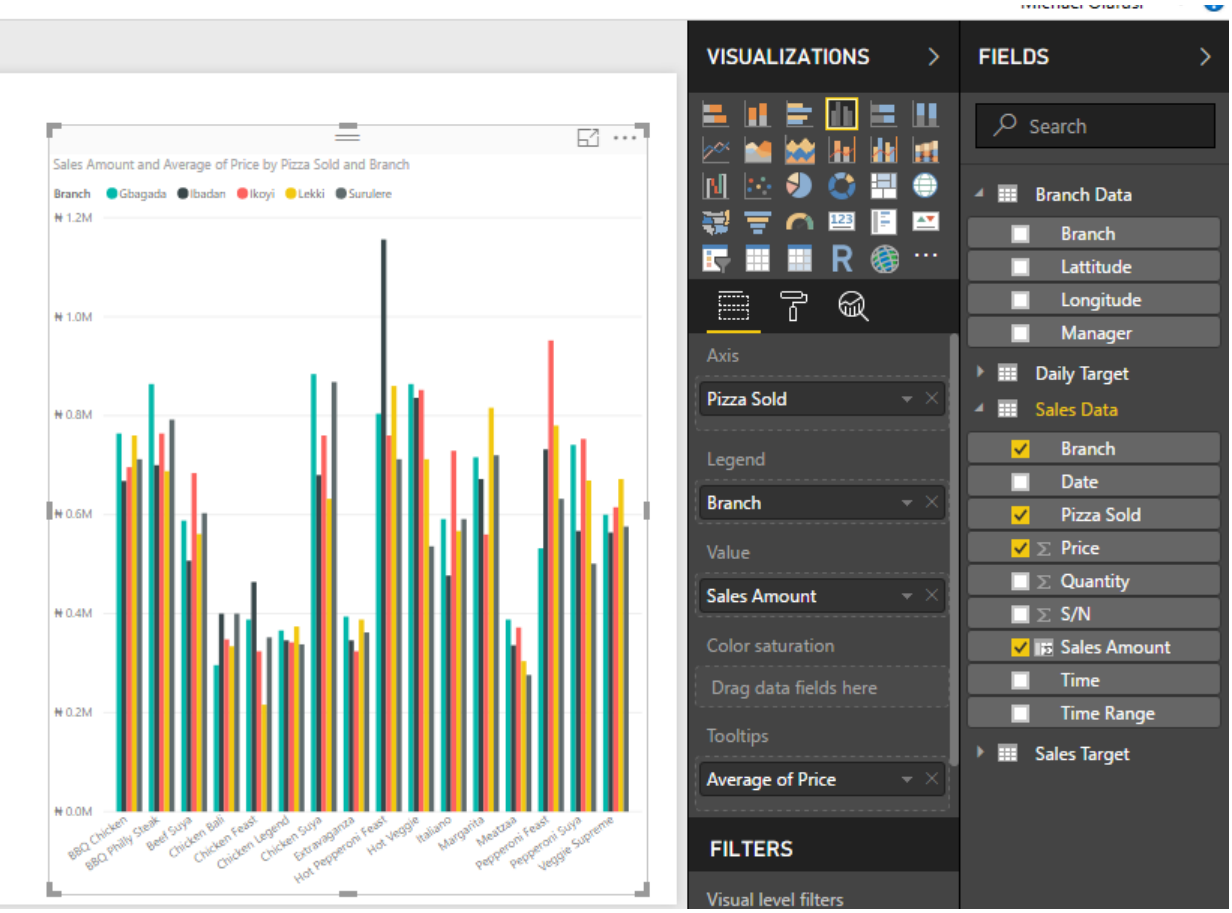
2. **Stacked Column Chart**: Technically same as the Stacked Bar Chart just the orientation is different, its bars are vertical.



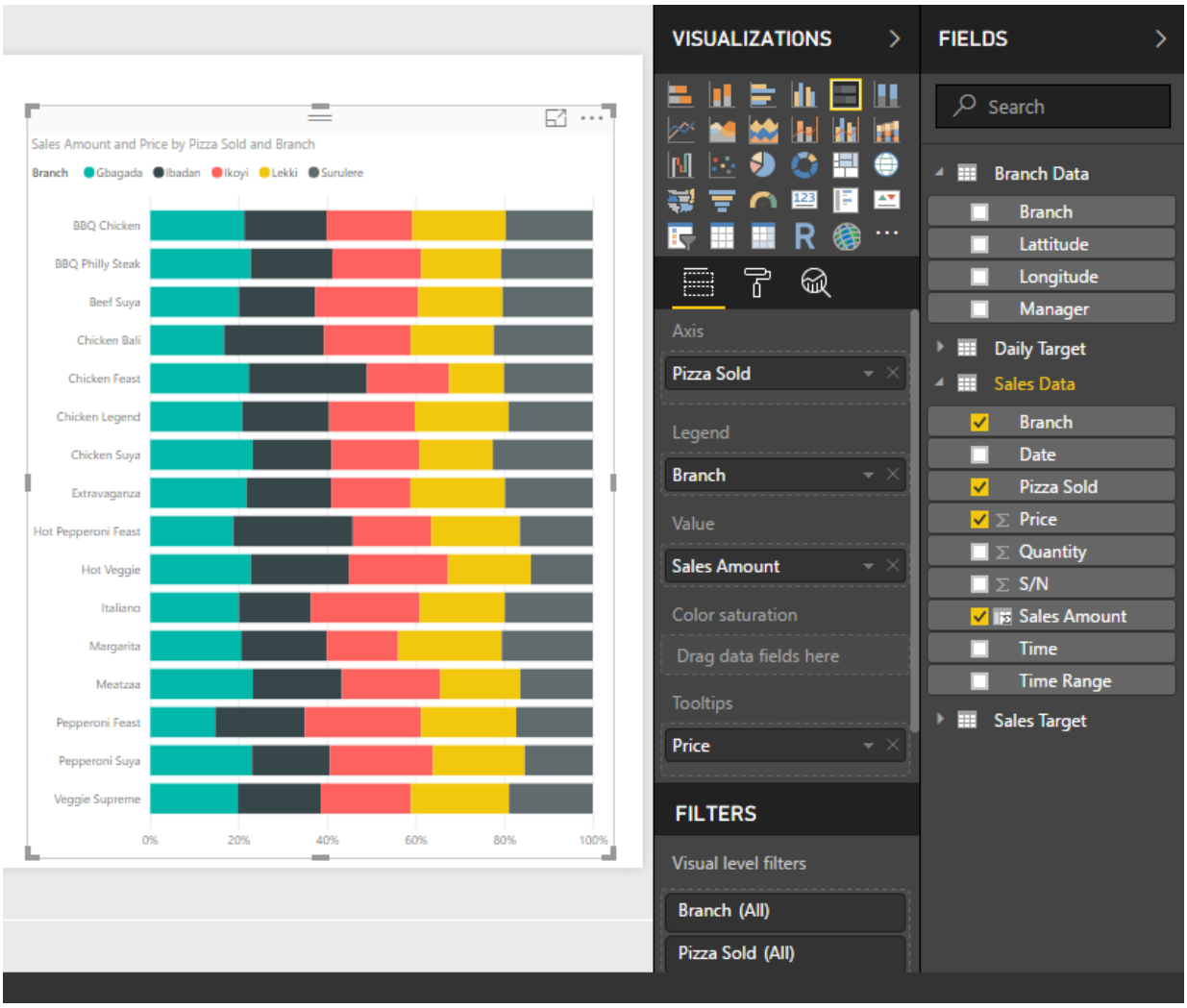
3. **Clustered Bar Chart**: The difference between this and the stacked one is that it has the breakdowns (legend values) plotted on independent bars rather than stacked one on another.



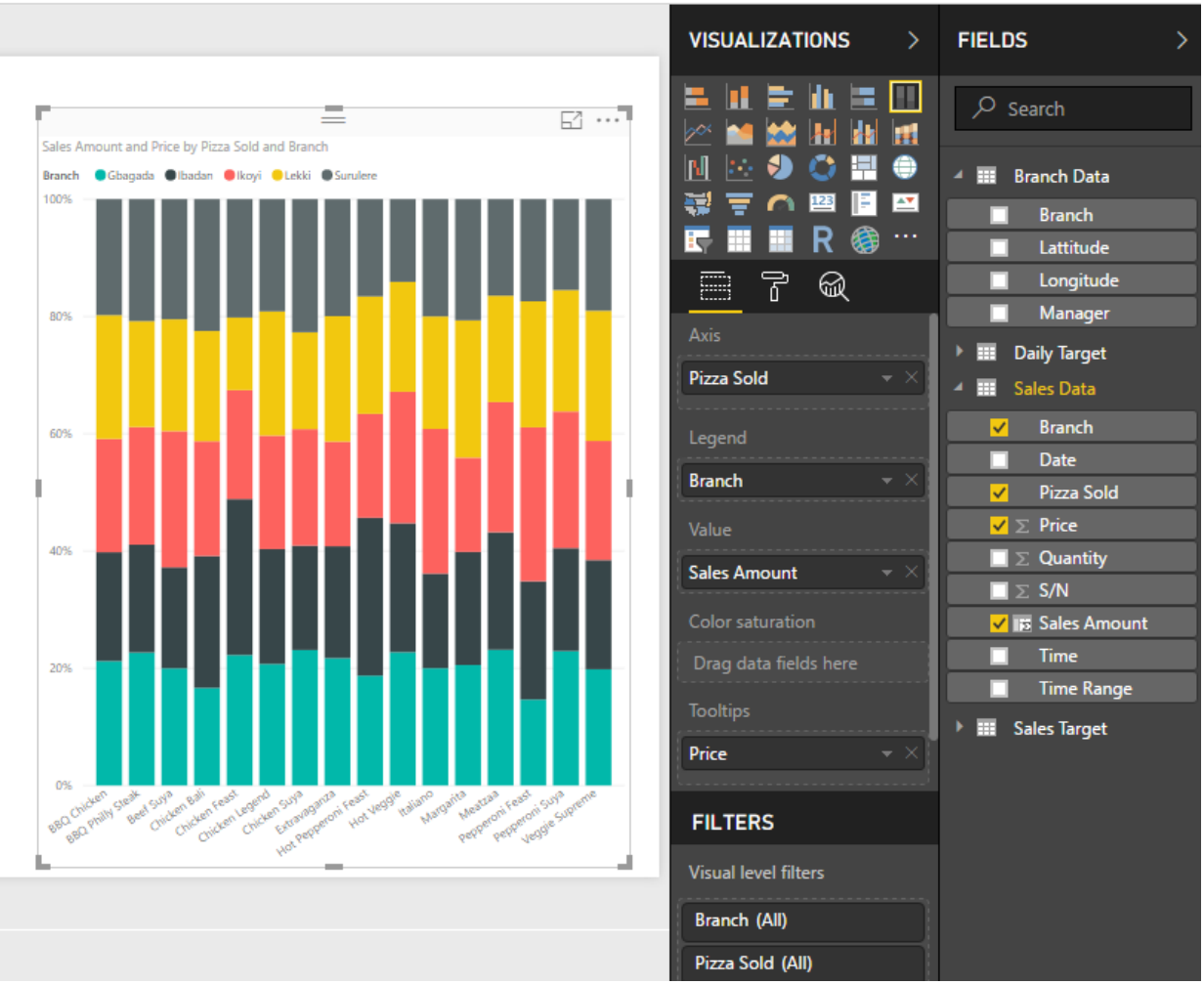
4. **Clustered Column Chart**: The difference between this and the stacked column chart is that it has the breakdowns (legend values) plotted on independent bars rather than stacked one on another.



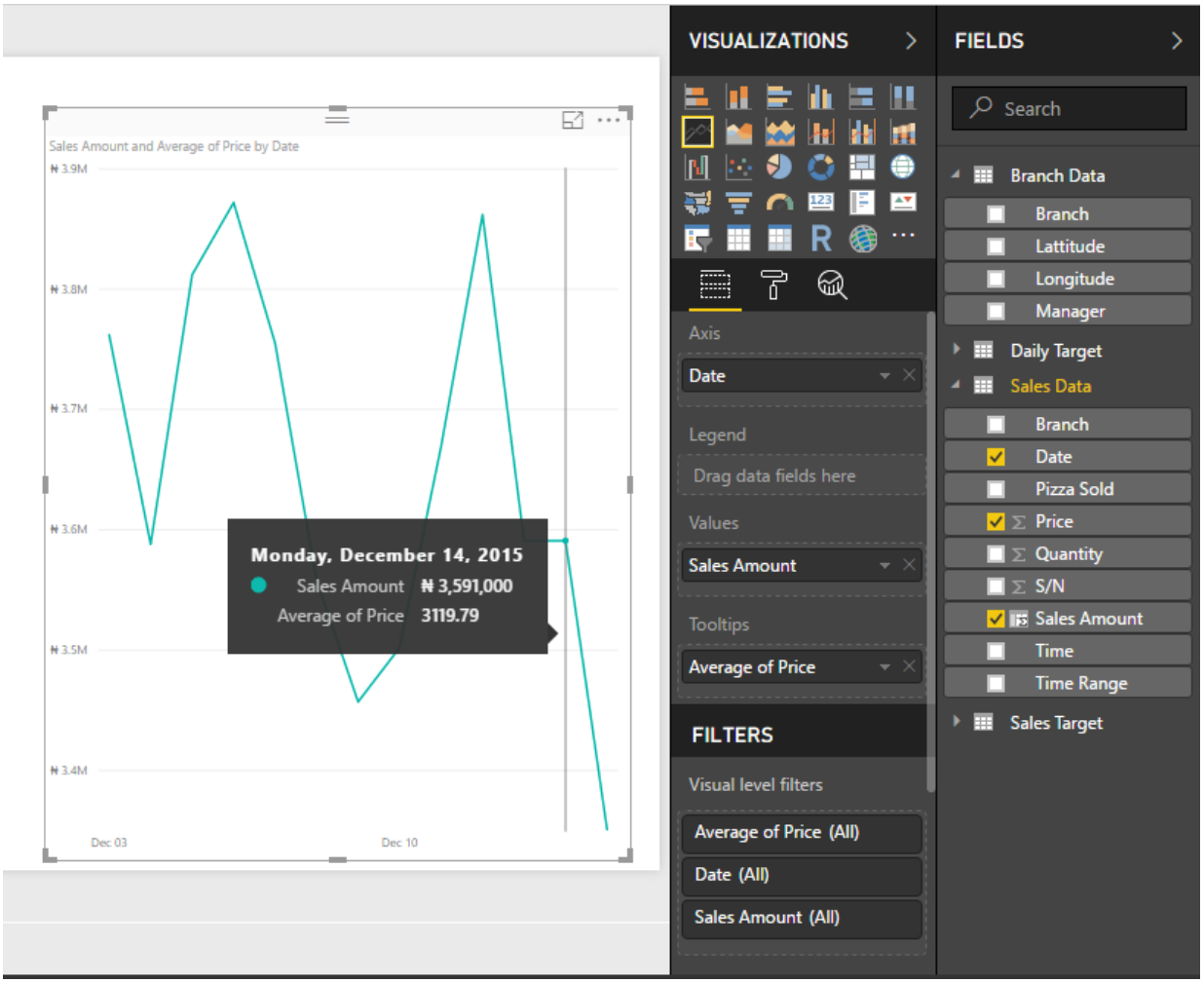
5. **100% Stacked Bar Chart**: This has the legend values (breakdown) expressed as percentages of the total value per axis item. Useful for showing relative contribution of sales by the different branches to total sales each day/month. And if you work with market research data, excellent for market share representation.



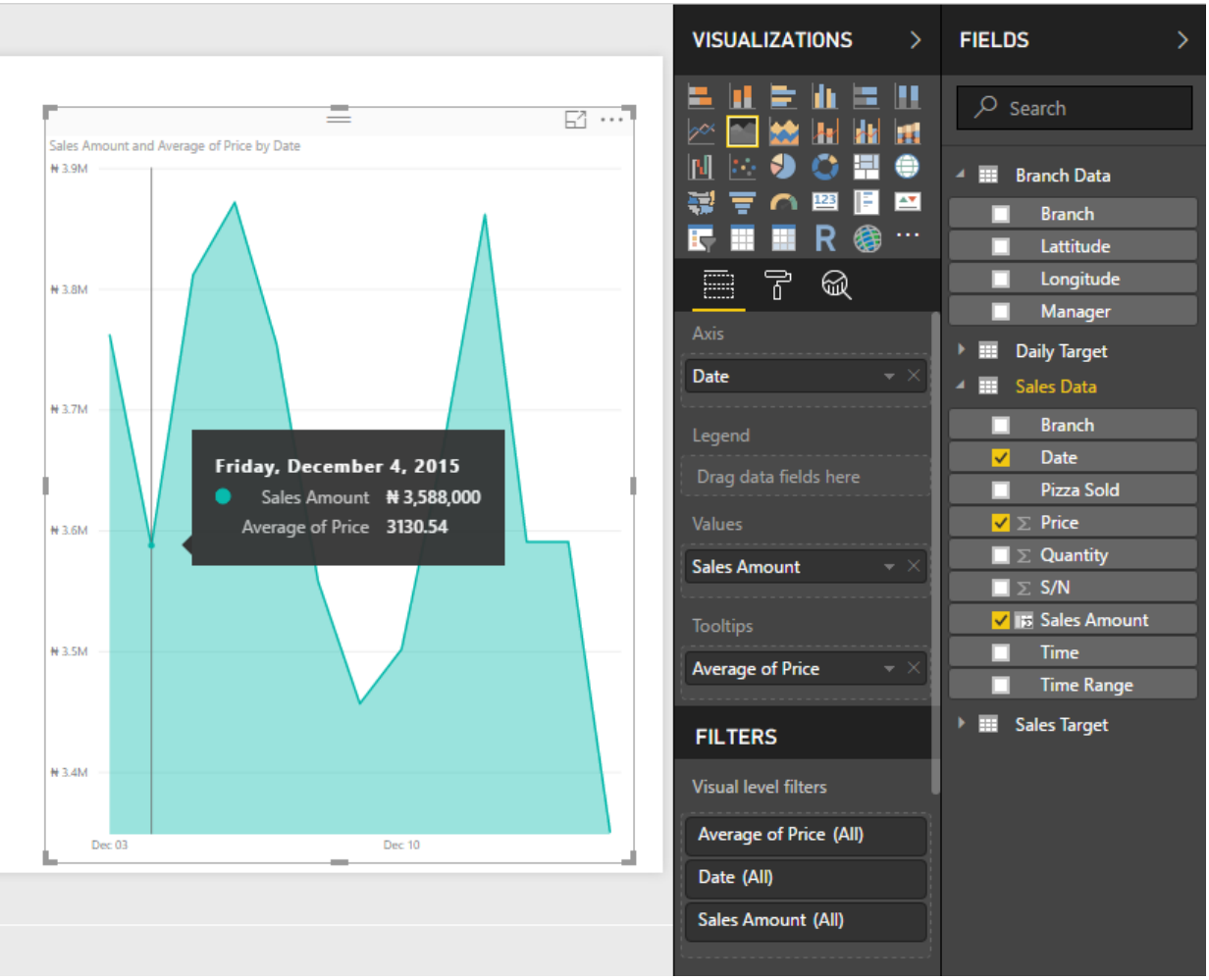
6. **100% Stacked Column Chart**: Just as you would have guessed, it is the column version of the 100% Stacked Bar Chart.



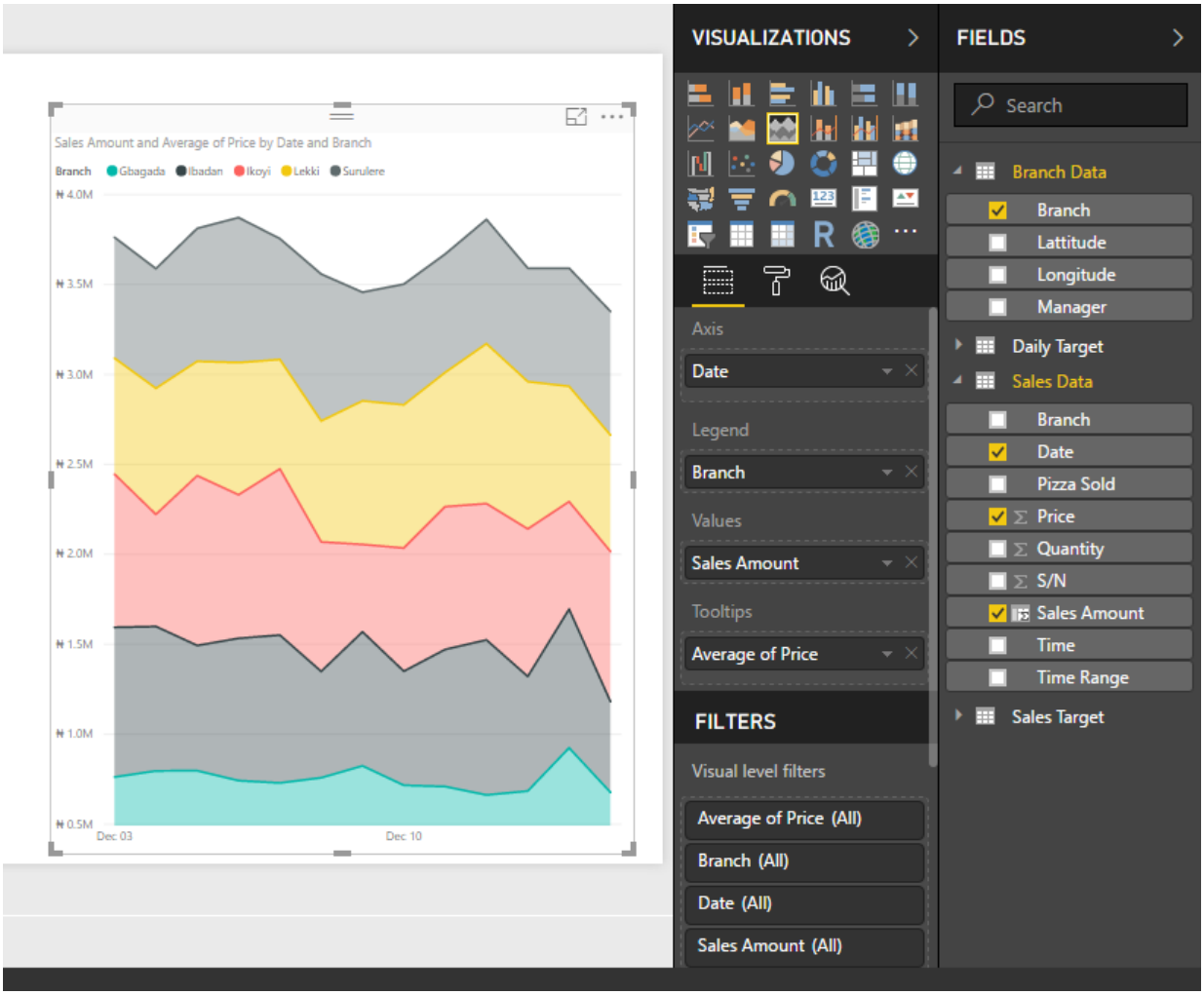
7. **Line Chart**: Has all the components of the Bar/Column chart except the Color Saturation one. The line chart is to show trend (change over time), so you should always put a date or time field in the Axis.



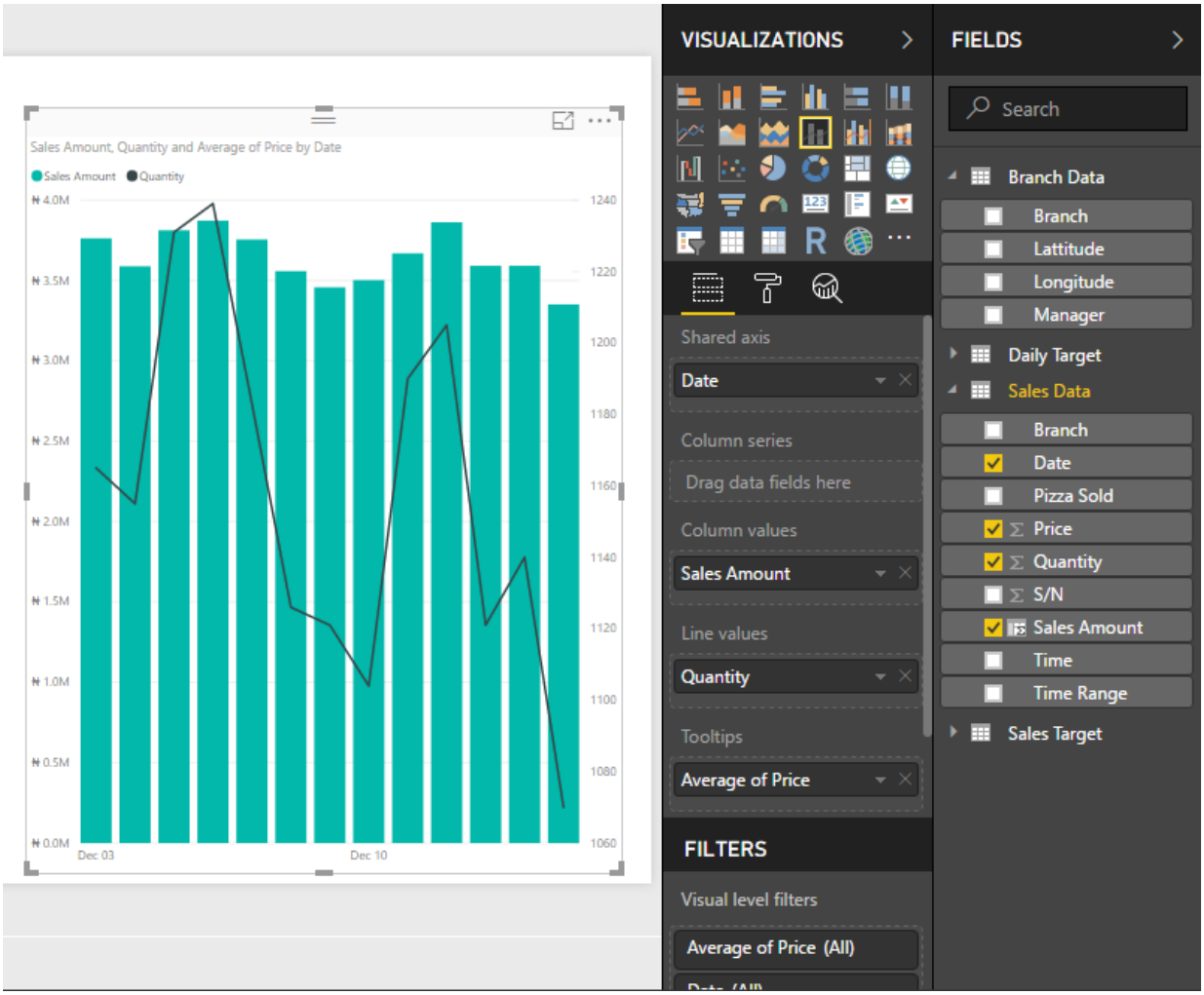
8. Area Chart: It is very much like the line chart but with the area under the lines shaded. Has same components as the line chart.



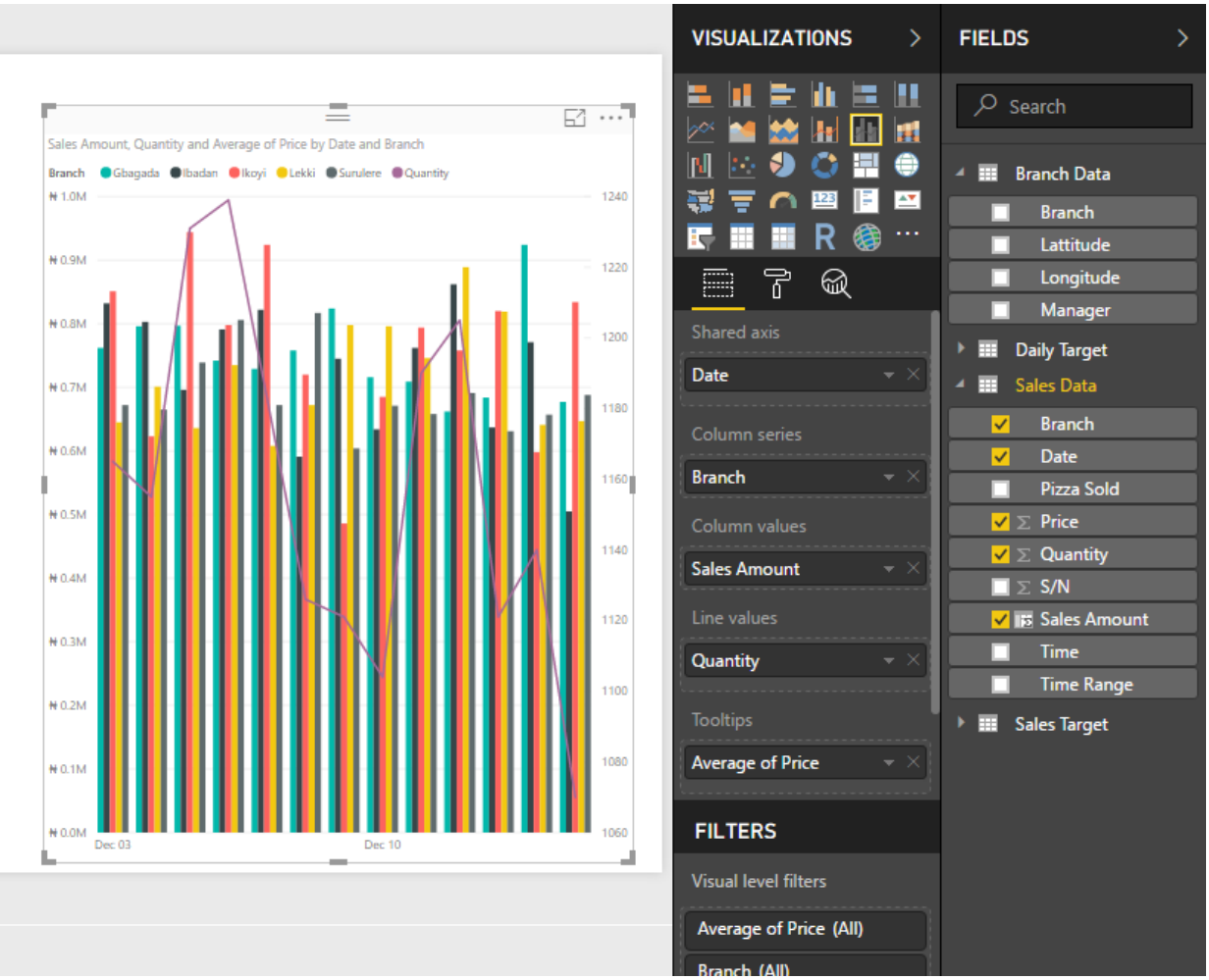
9. **Stacked Area Chart**: You already know area chart, this is when you stack the legend entries one on another.



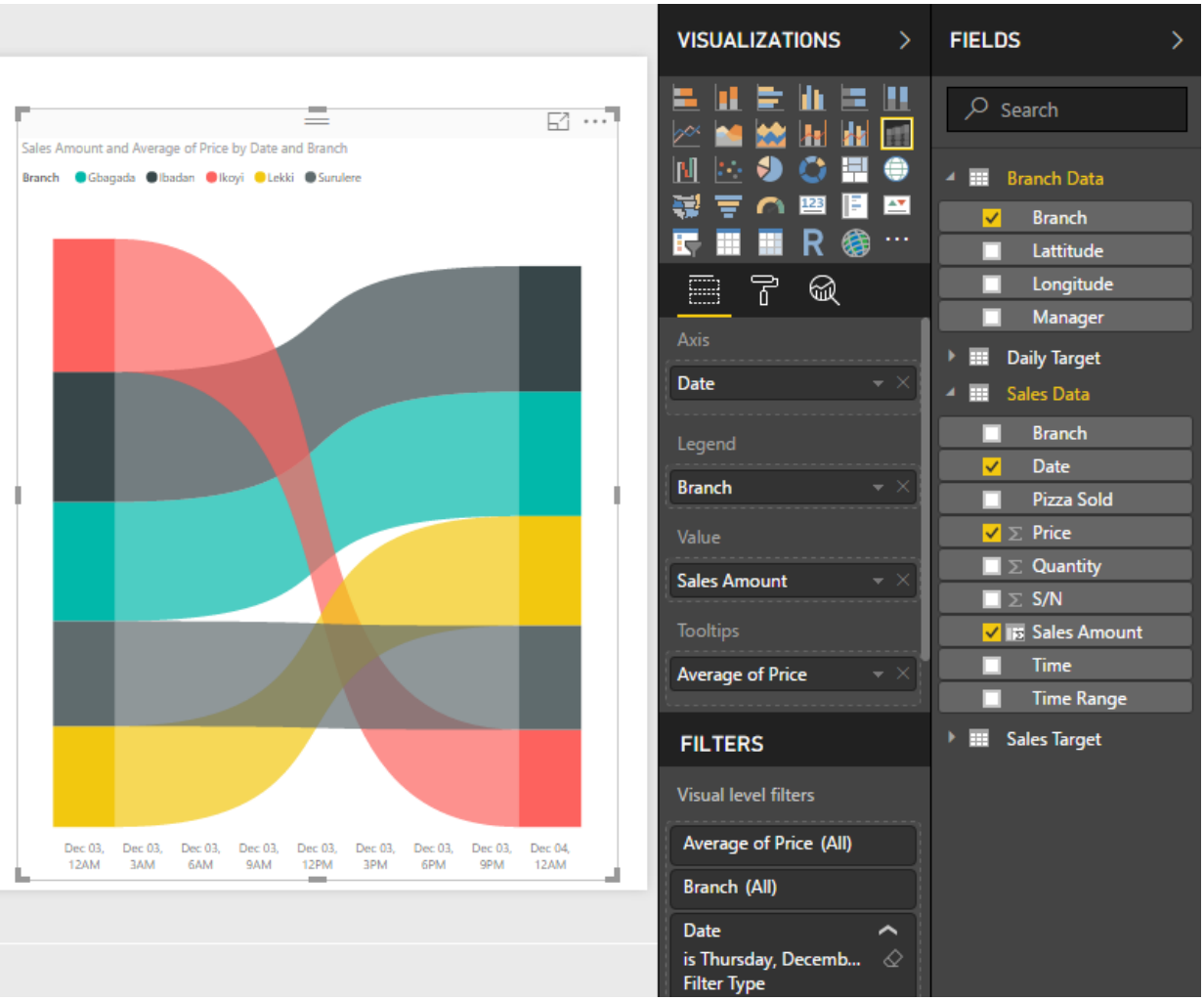
10. **Line and Stacked Column Chart**: This is just combining line chart with column chart in the same visual. It is what we call Combo Chart in Excel and can be useful for showing two distinct insights in one visual — like the gross margin as a line chart and the revenue as a column chart over a period of time.



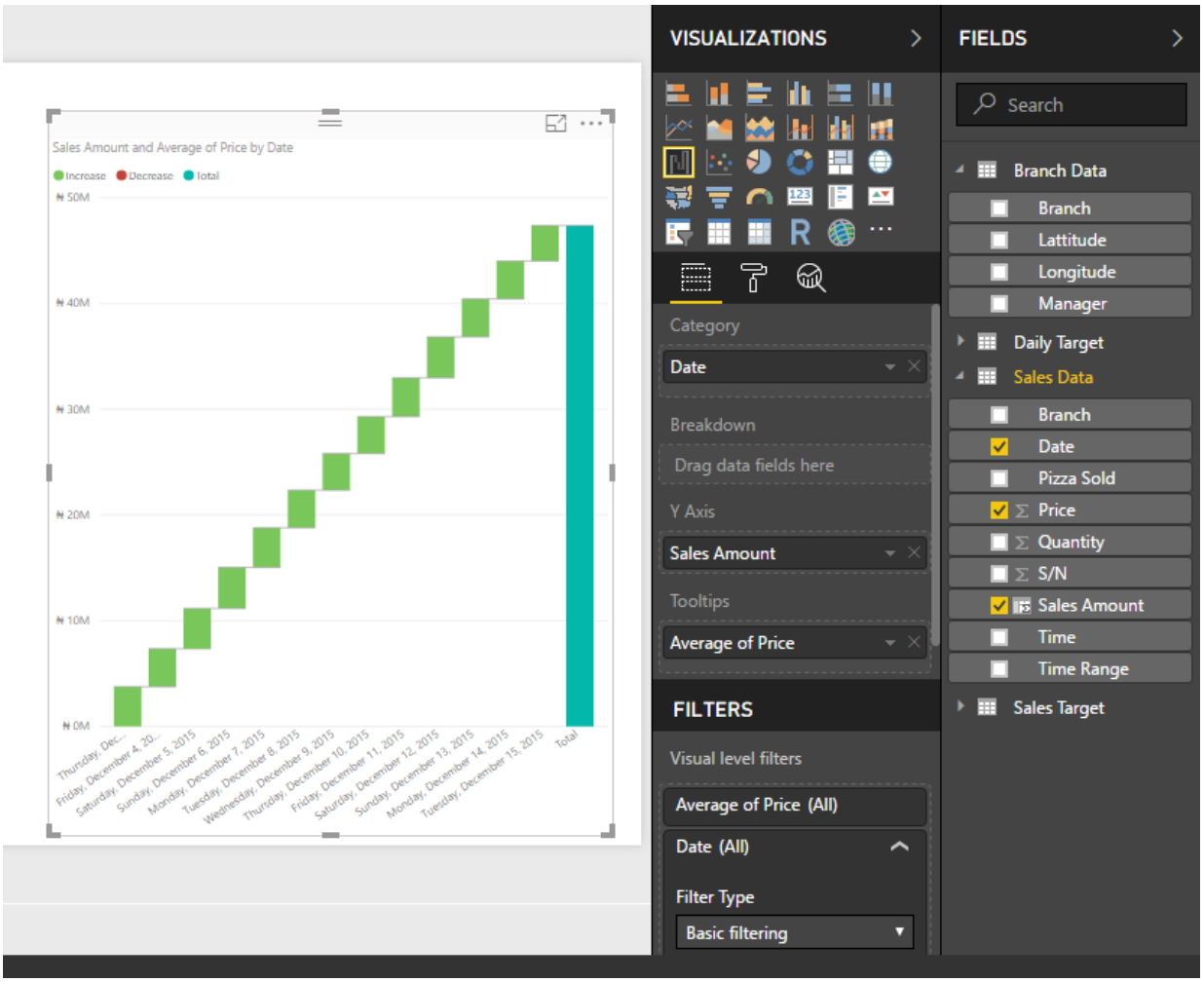
11. **Line and Clustered Column Chart**: Again, just like the line and stacked column one except that the columns aren't stacked.



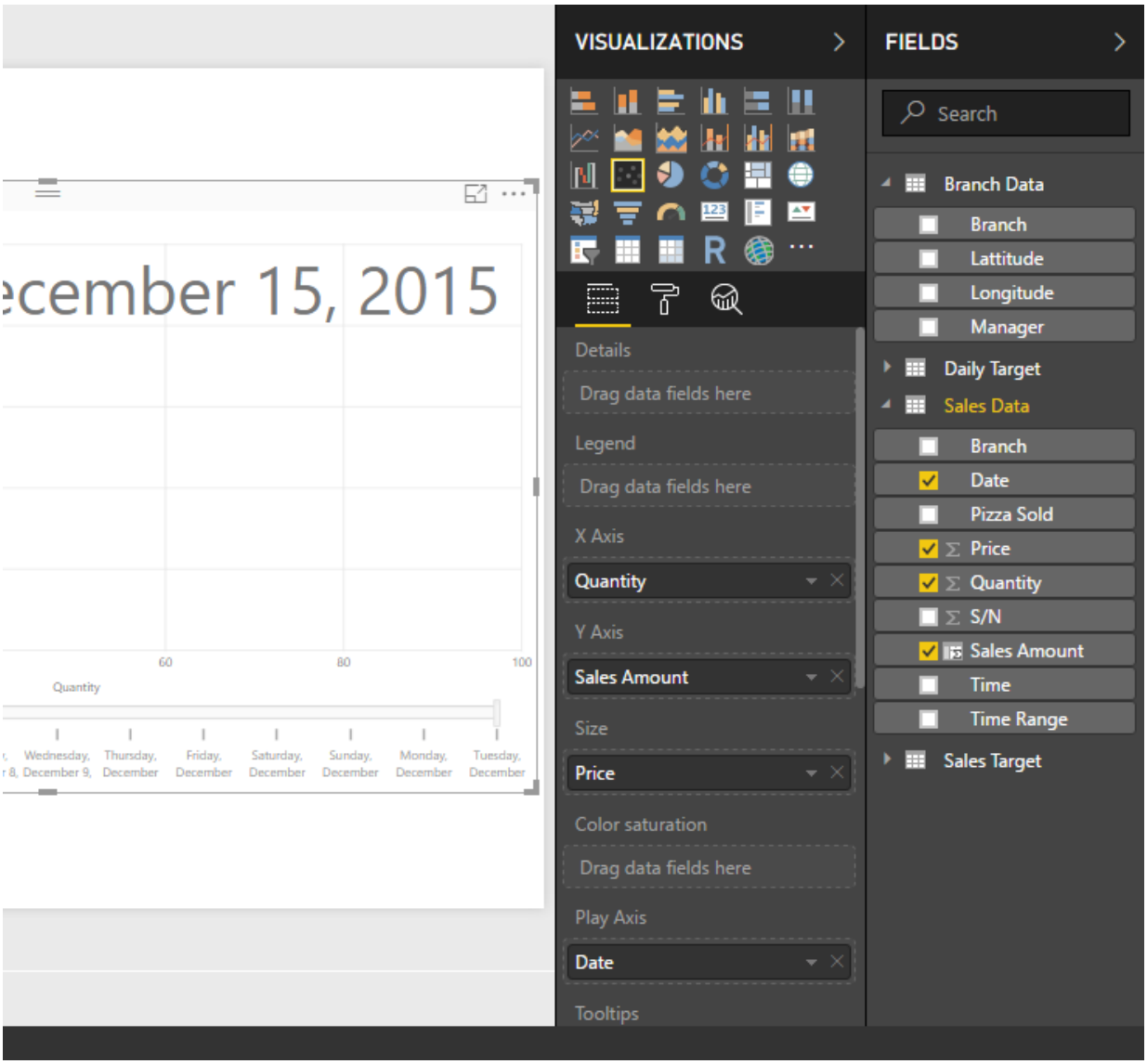
12. **Ribbon Chart**: This chart is a lot like the area chart but with the added advantage that it makes it easier to see the changes in the values of the entries in the legend.



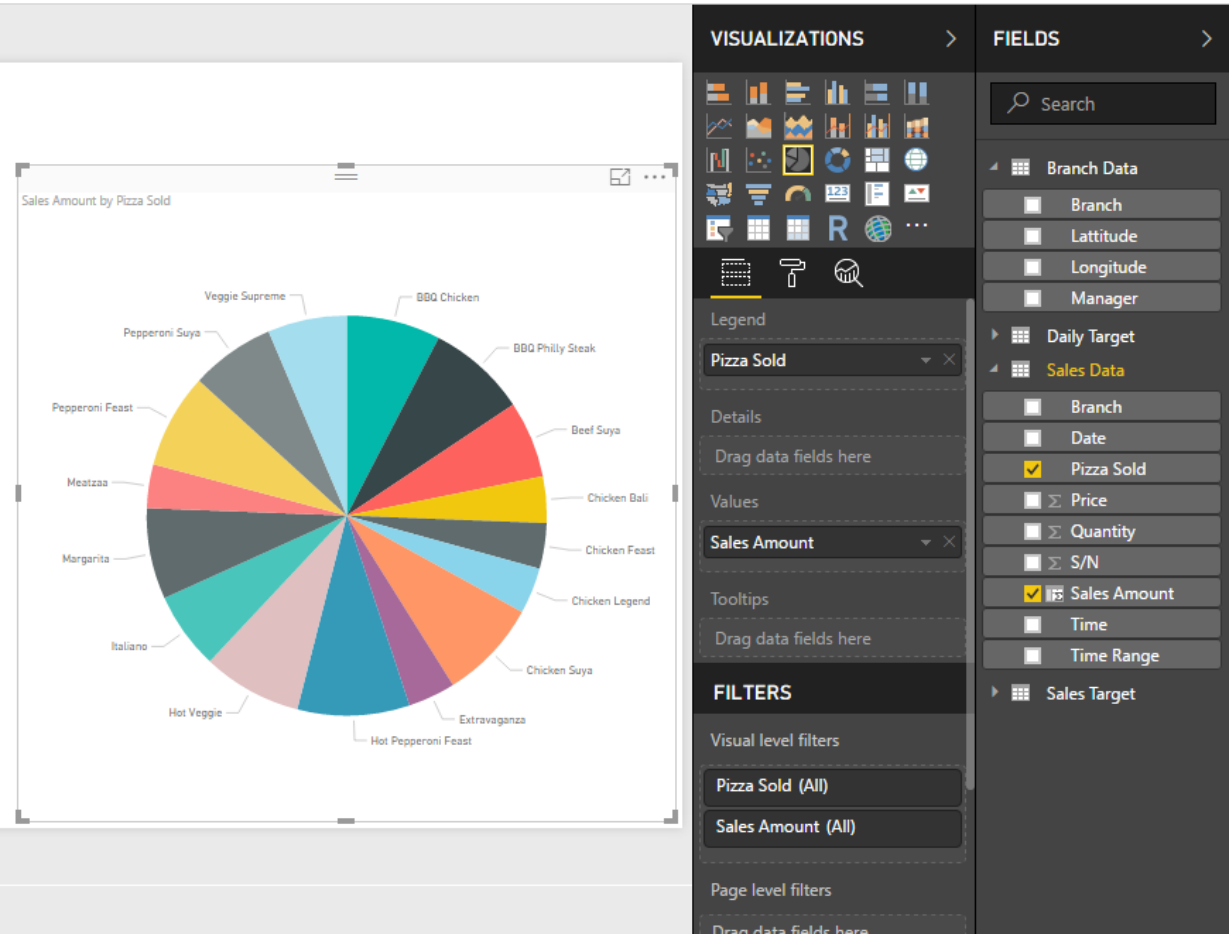
13. **Waterfall Chart**: This chart is for showing the movement in a metric over a period of time, emphasizing the initial value and the end value. It is a beloved chart of finance analysts, it is often used to present changes in a company's cashflow from opening cashflow to closing cashflow over a reporting financial period.



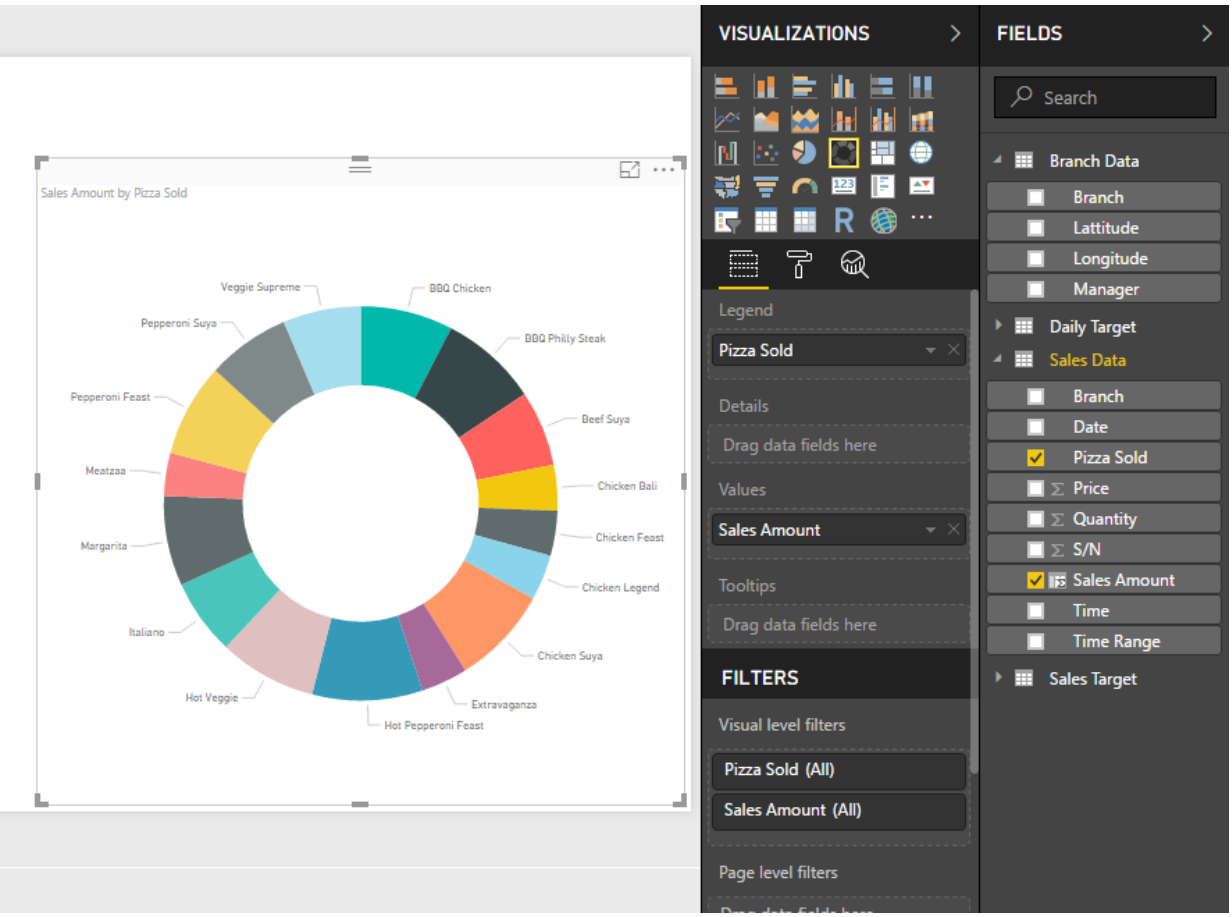
14. **Scatter Chart**: This chart is for showing the relationship between two variables. That is why it requires you put a field in X-axis and another in Y-axis. And it can also serve as bubble chart, you only need to drag the field to determine the bubble size into Size.



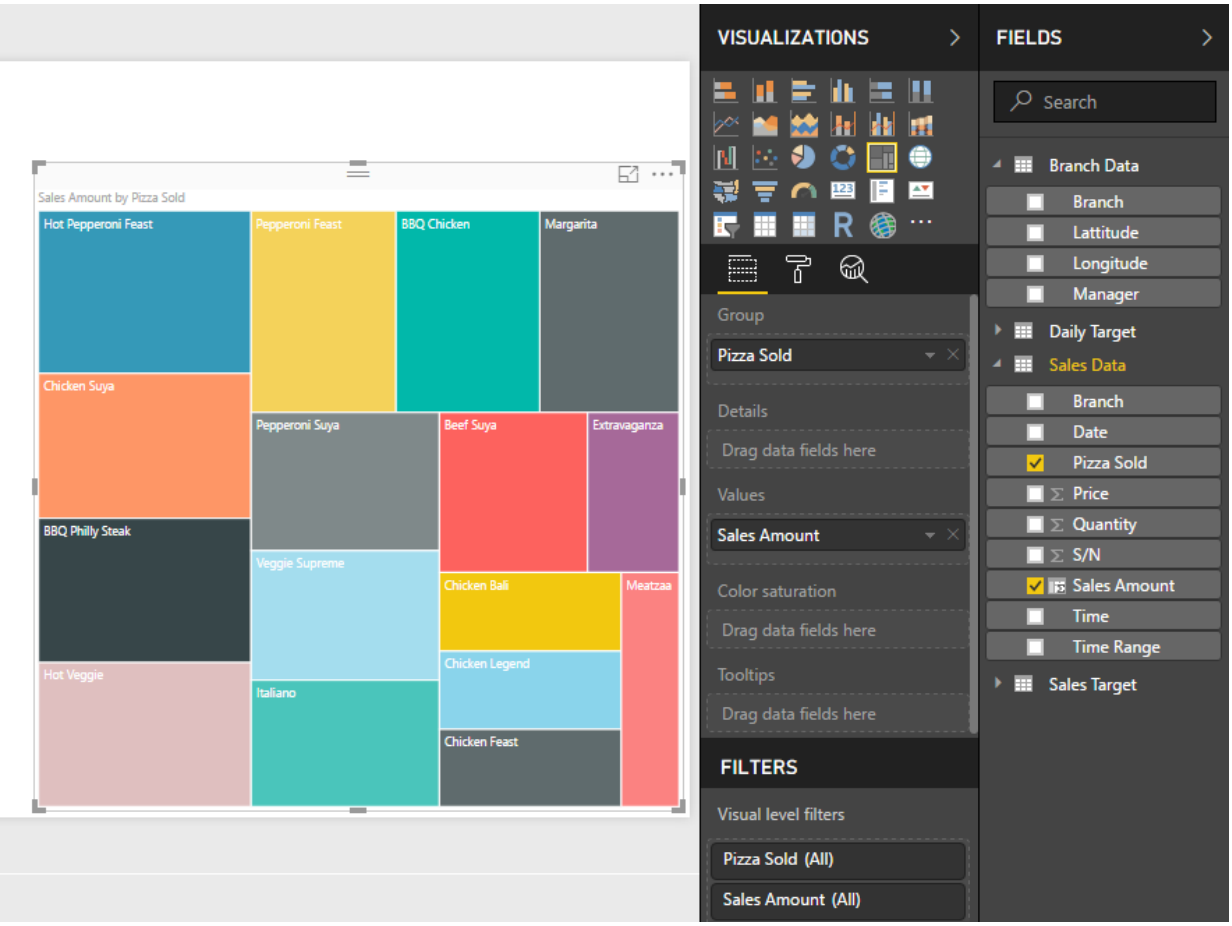
15. **Pie Chart**: This chart shows relative contribution of entries in the field put in the Legend to the field put in the Values. You can also put a field with additional useful information in the Details.



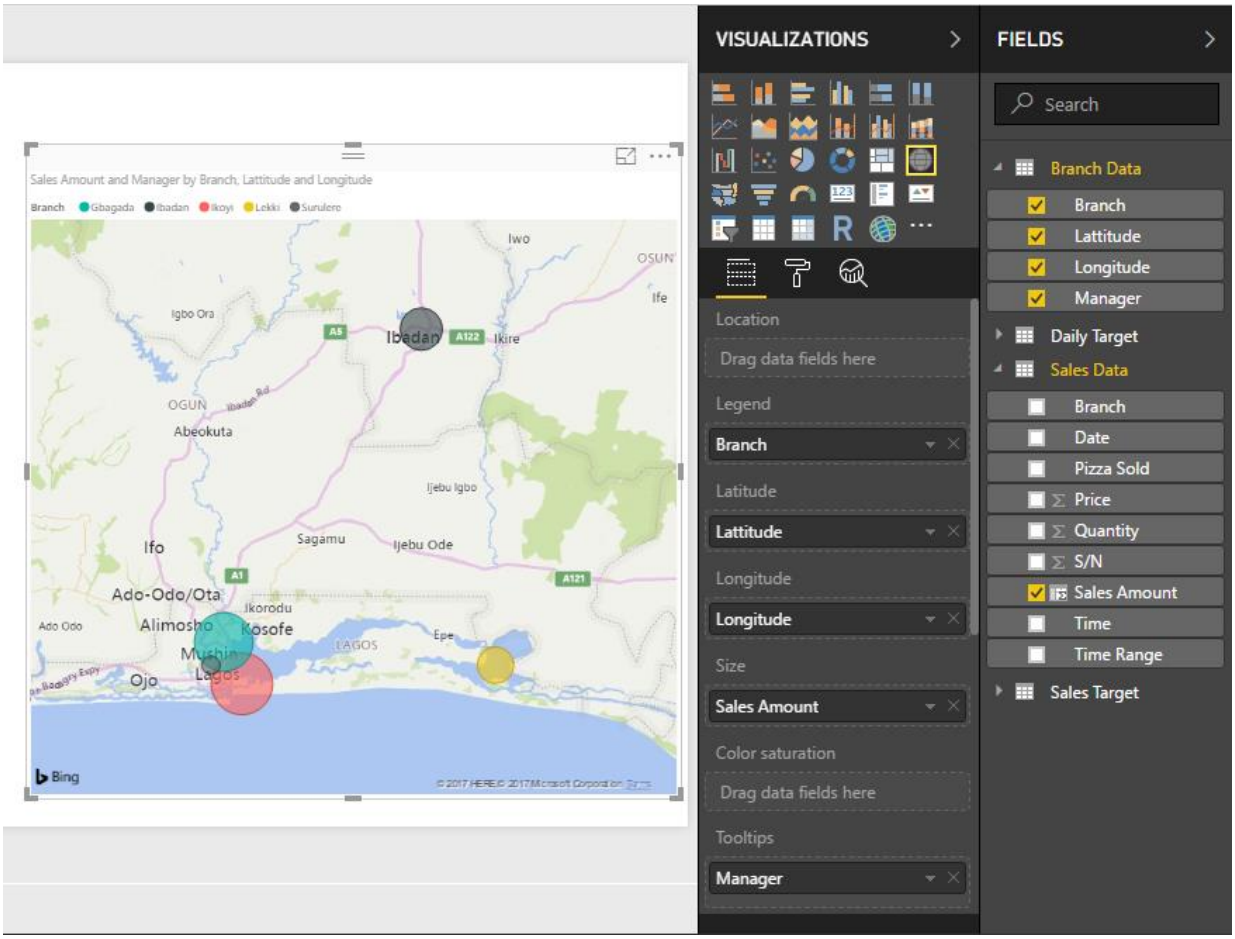
16. **Donut Chart:** It is exactly pie chart but with the traditional donut hole.



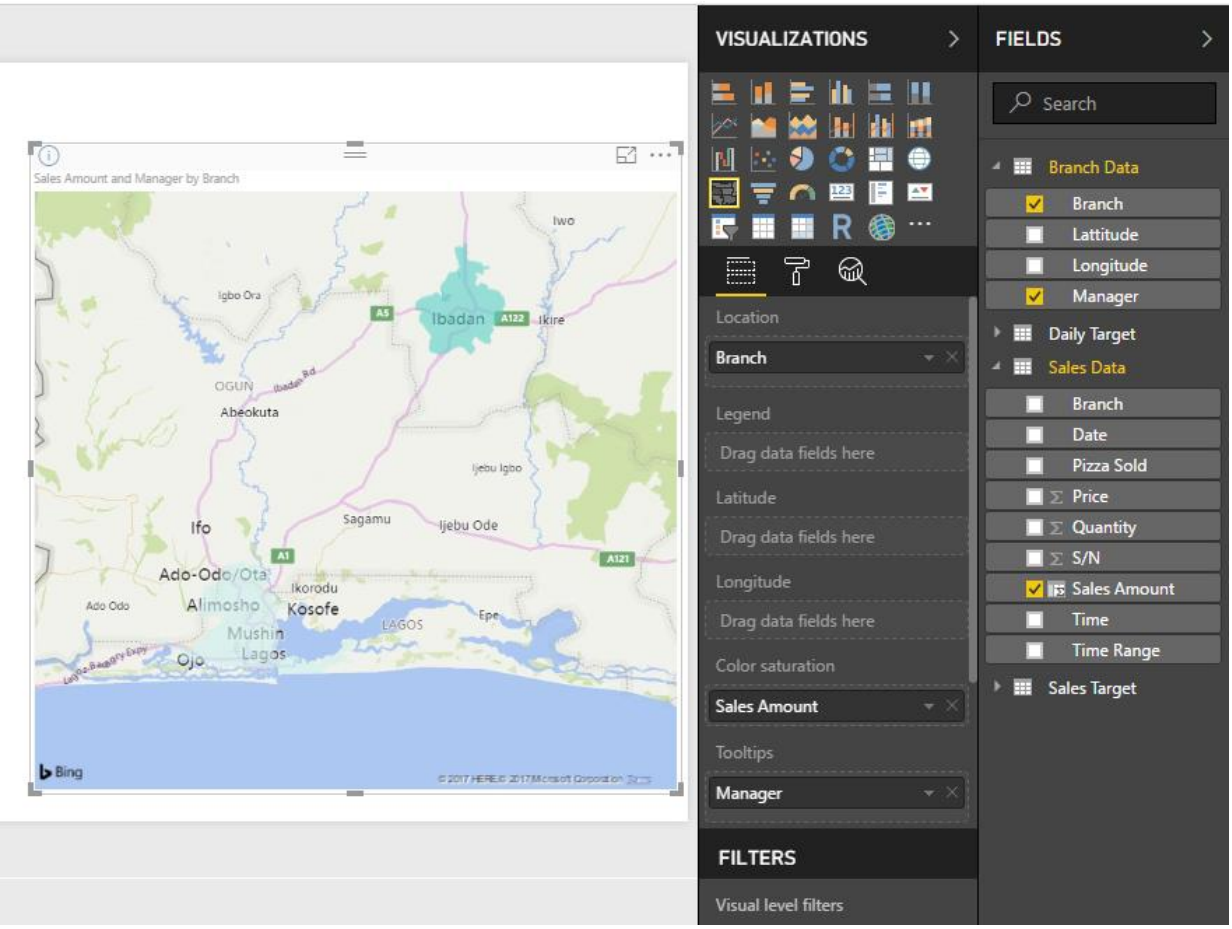
17. **Treemap**: This chart shows relative contribution but unlike pie chart that fits everything in a big circle this one fits everything in a resizable rectangle.



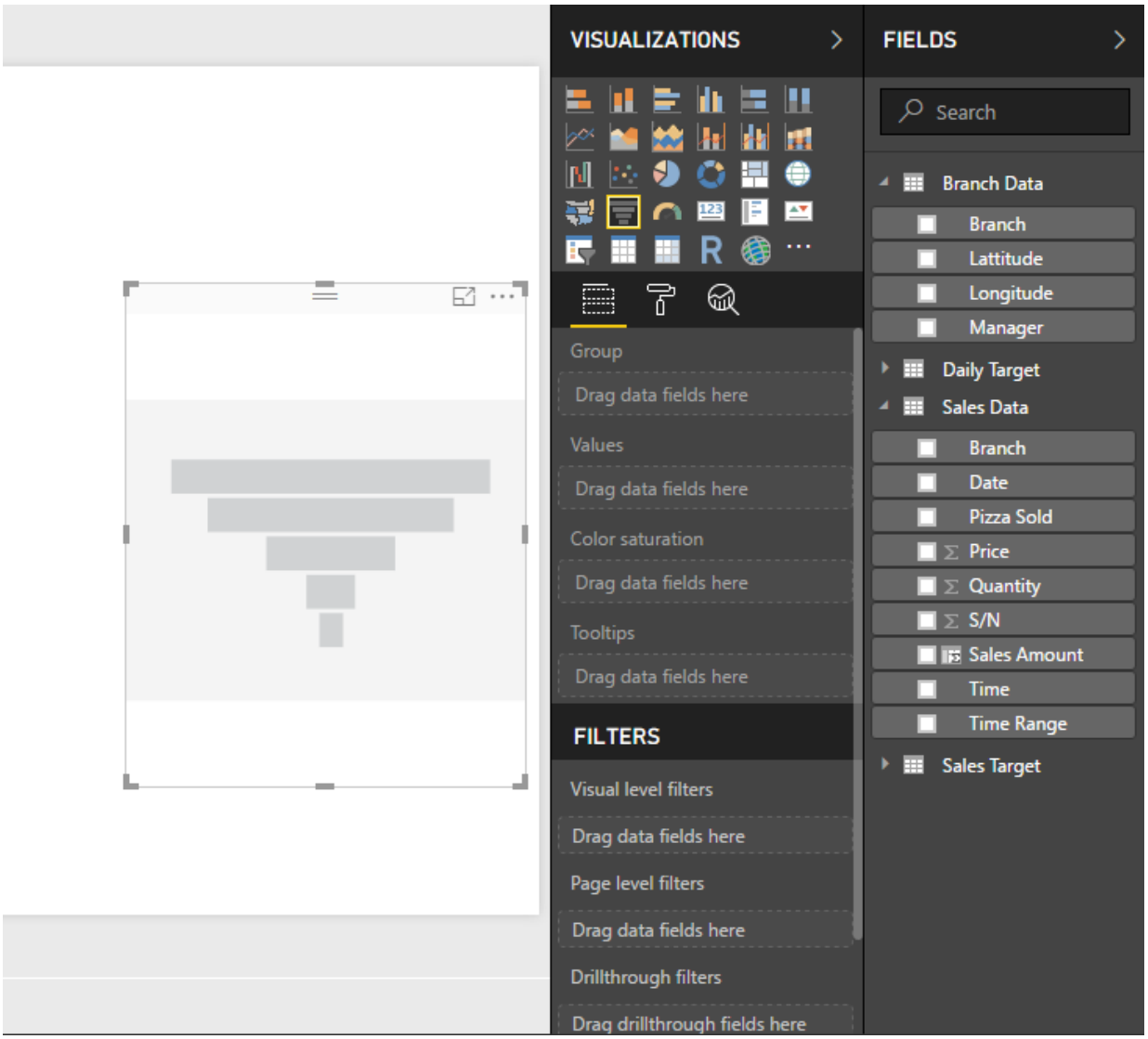
18. **Map**: The name is very self-explanatory. Normally, you would drag countries/cities or any location field to Location but if the locations are not very popular places you might need to get the GPS coordinates and place in the Latitude and Longitude.



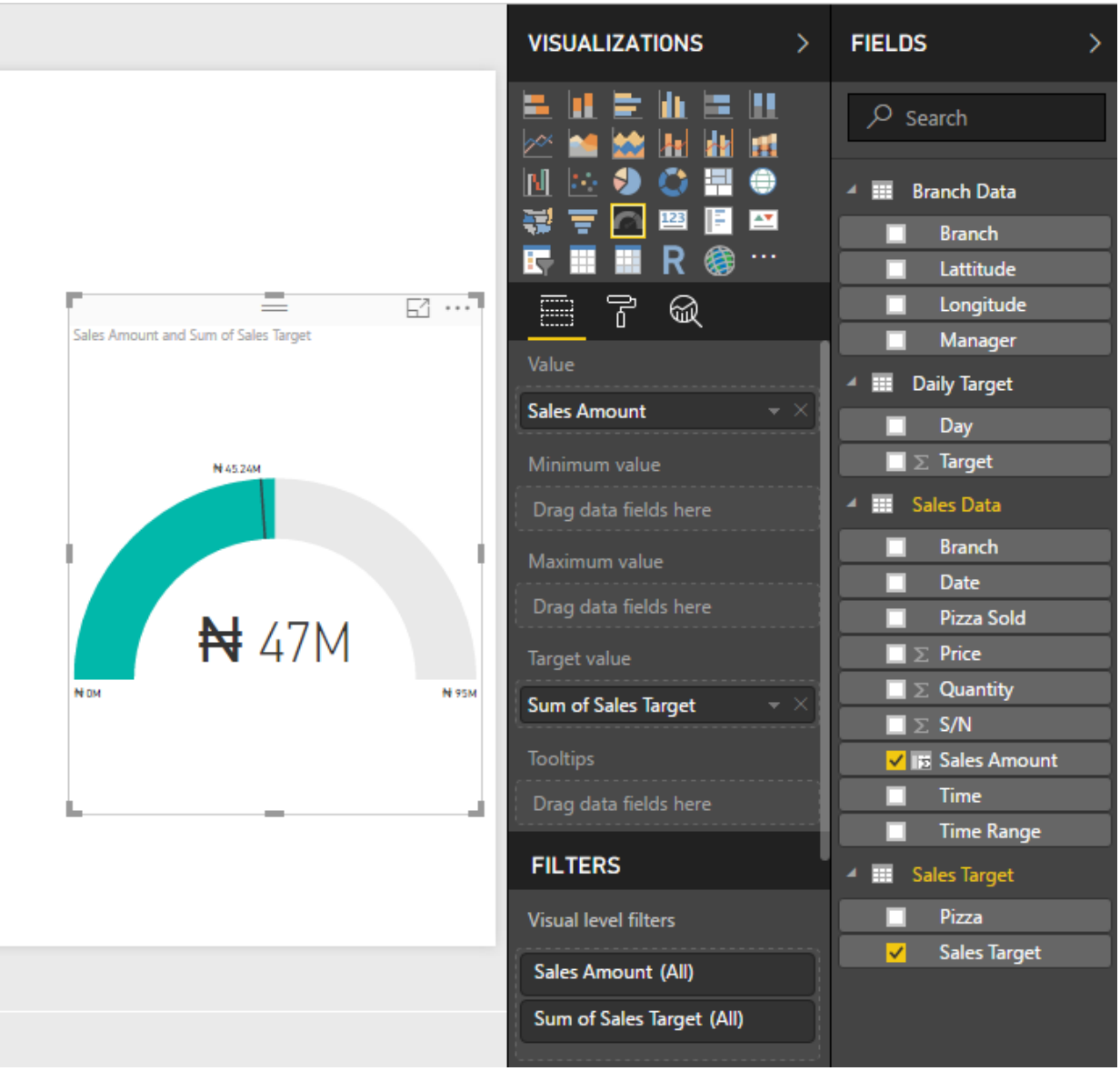
19. **Filled Map**: It is like the Map but fills the entire location area on the map taking the shape of the country/state/city.



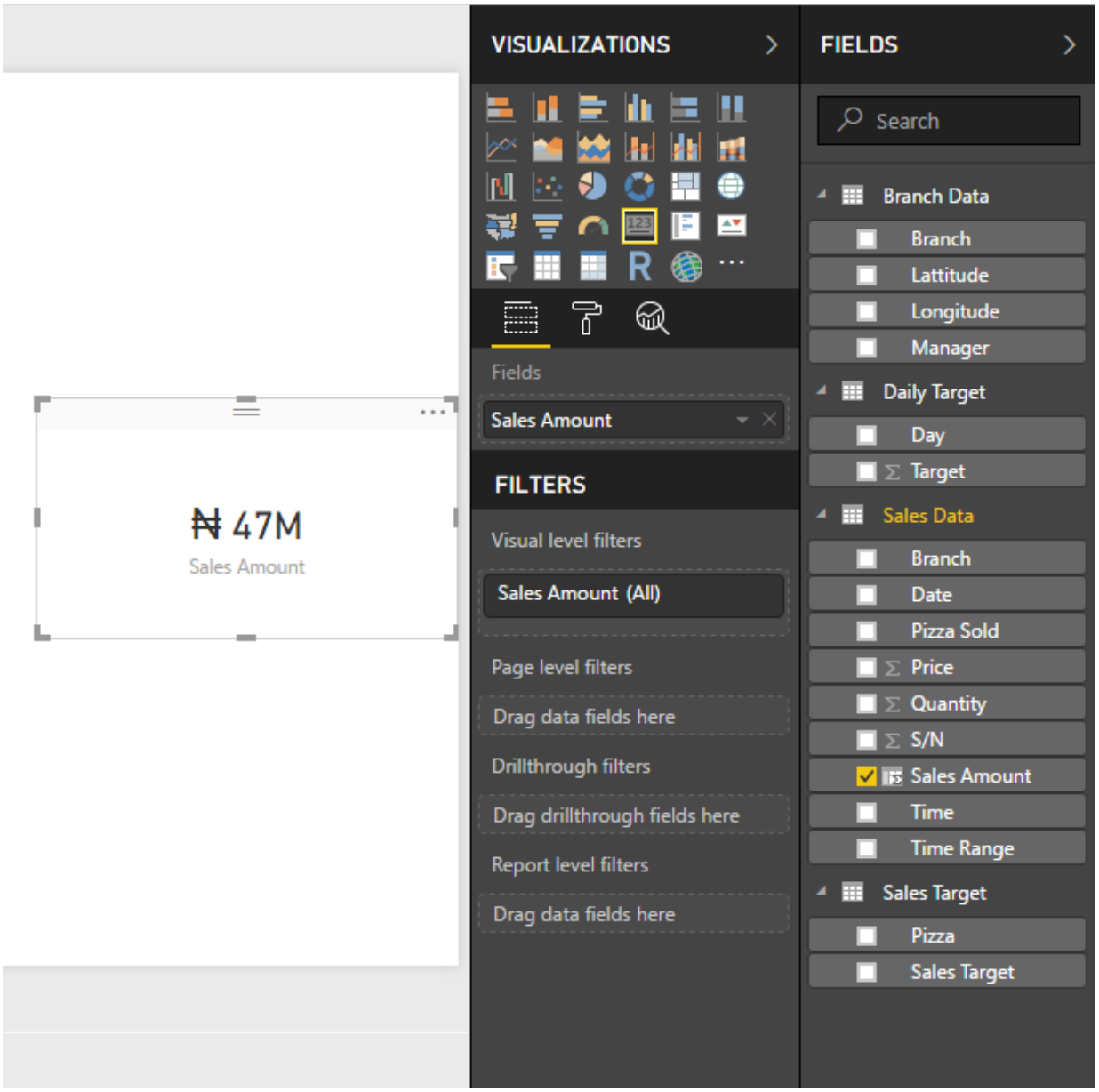
20. **Funnel**: This chart is best for stage-like fields and values. Popular for sales conversion records. You can put the sales/conversion stages in the Group.



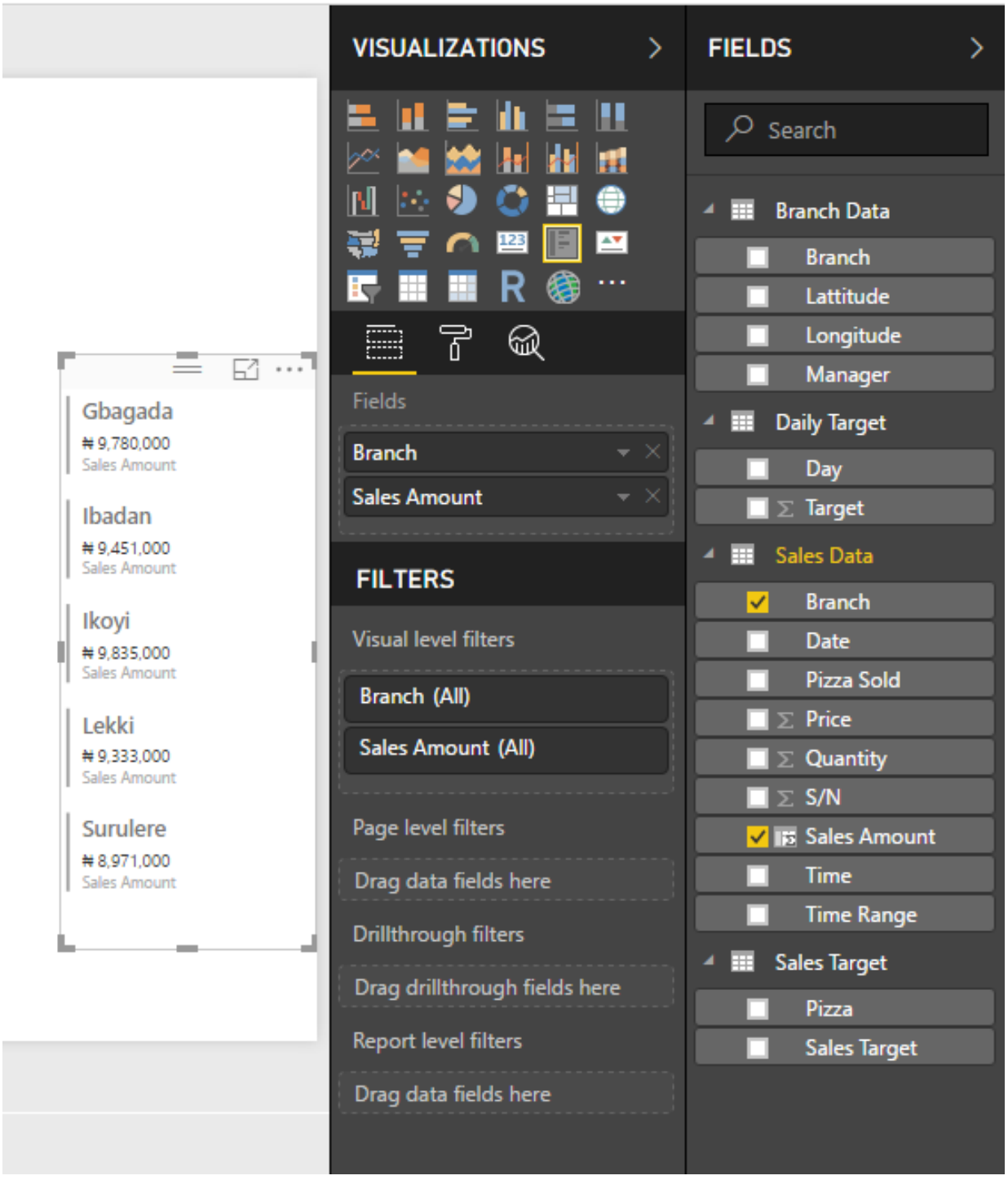
21. **Gauge**: This chart is great for showing the values against target on a gauge-like scale. And you can set the dimensions (minimum and maximum of the scale). It is one of the few visuals that allow you to set an alert on in the published Power BI dashboard



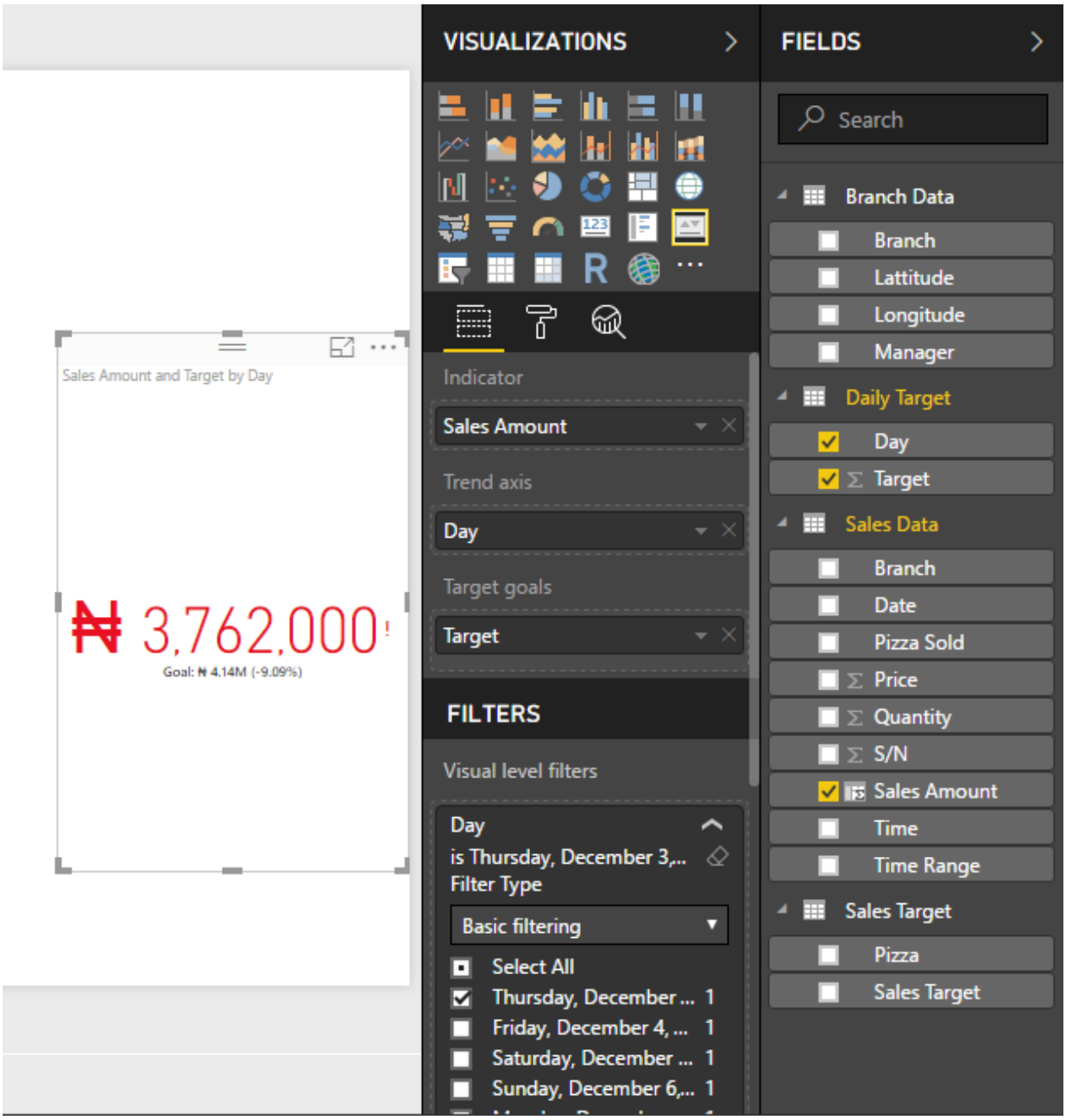
22. **Card**: It displays just one thing. Can be very useful for showing total sales, KPI figure and counts (like number of stores or orders). It is also one of the visuals that allow you to set an alert on it in the published Power BI dashboard.



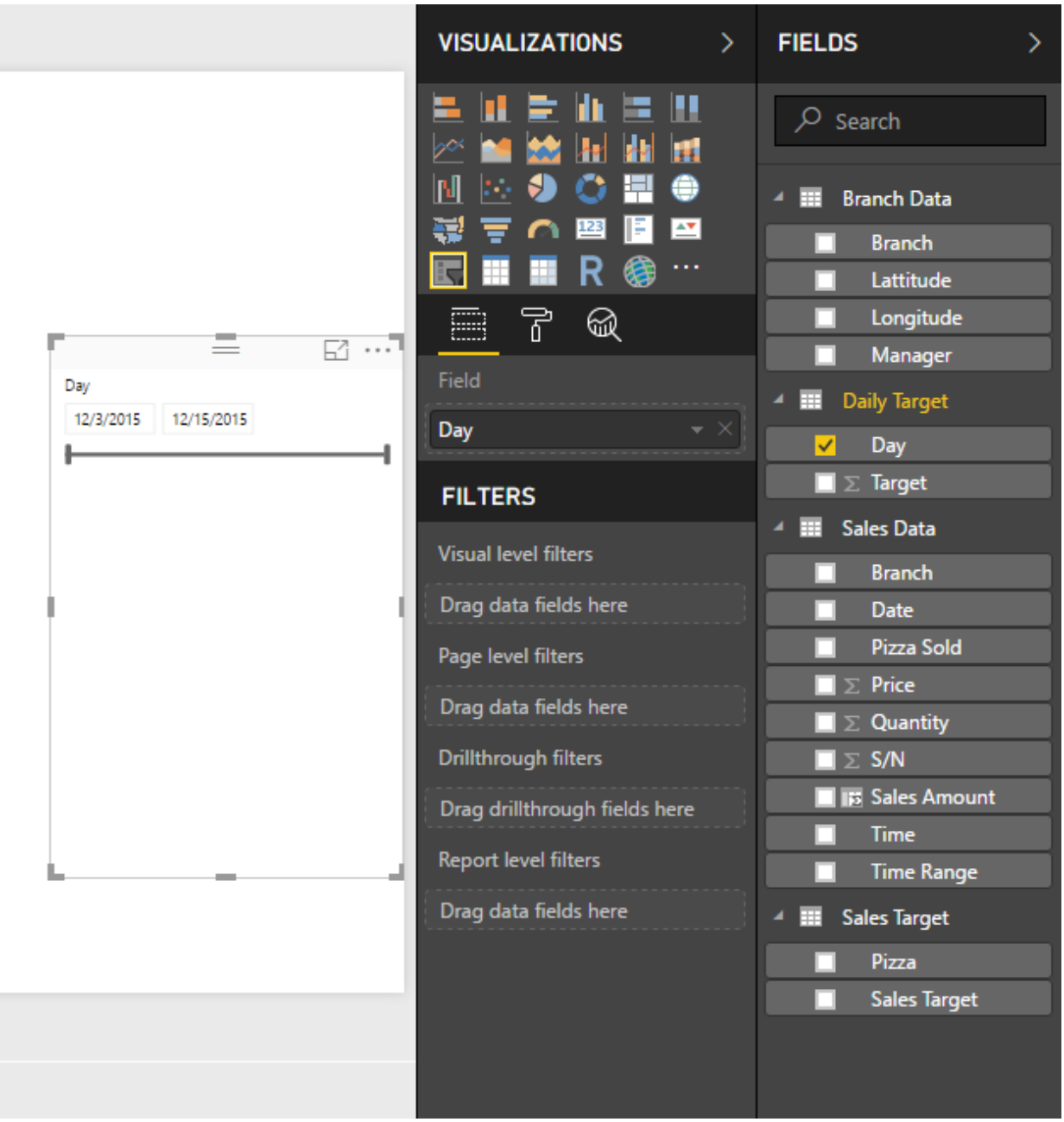
23. **Multi-row Card**: It is like card with extra features — ability to display values of more than one field. An example is sales by branch.



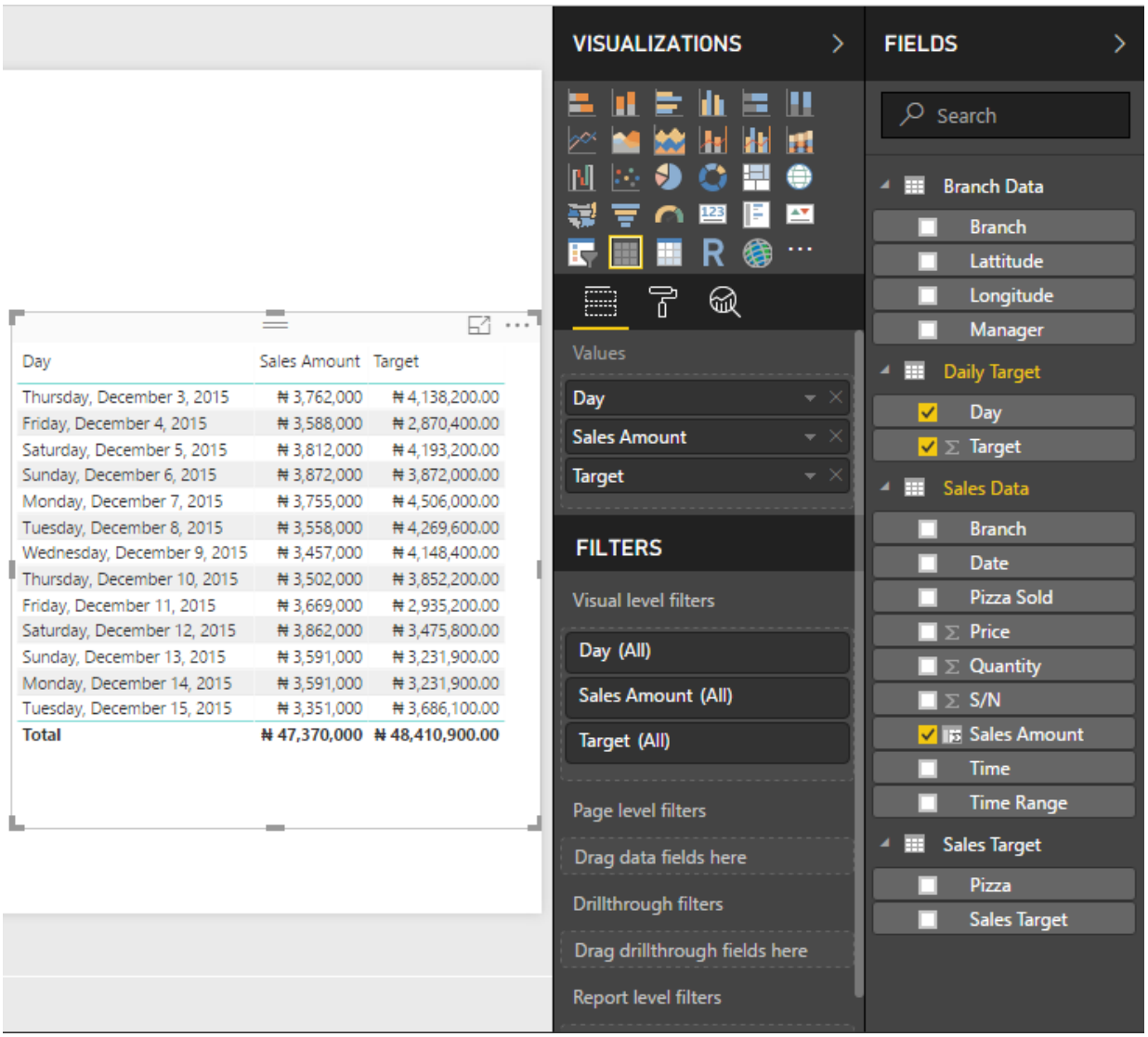
24. KPI: It shows the variance between a value and its set target. Very useful for key performance indicators (KPIs).



25. Slicers: I often call them nicer filters. Work exactly as a filter.

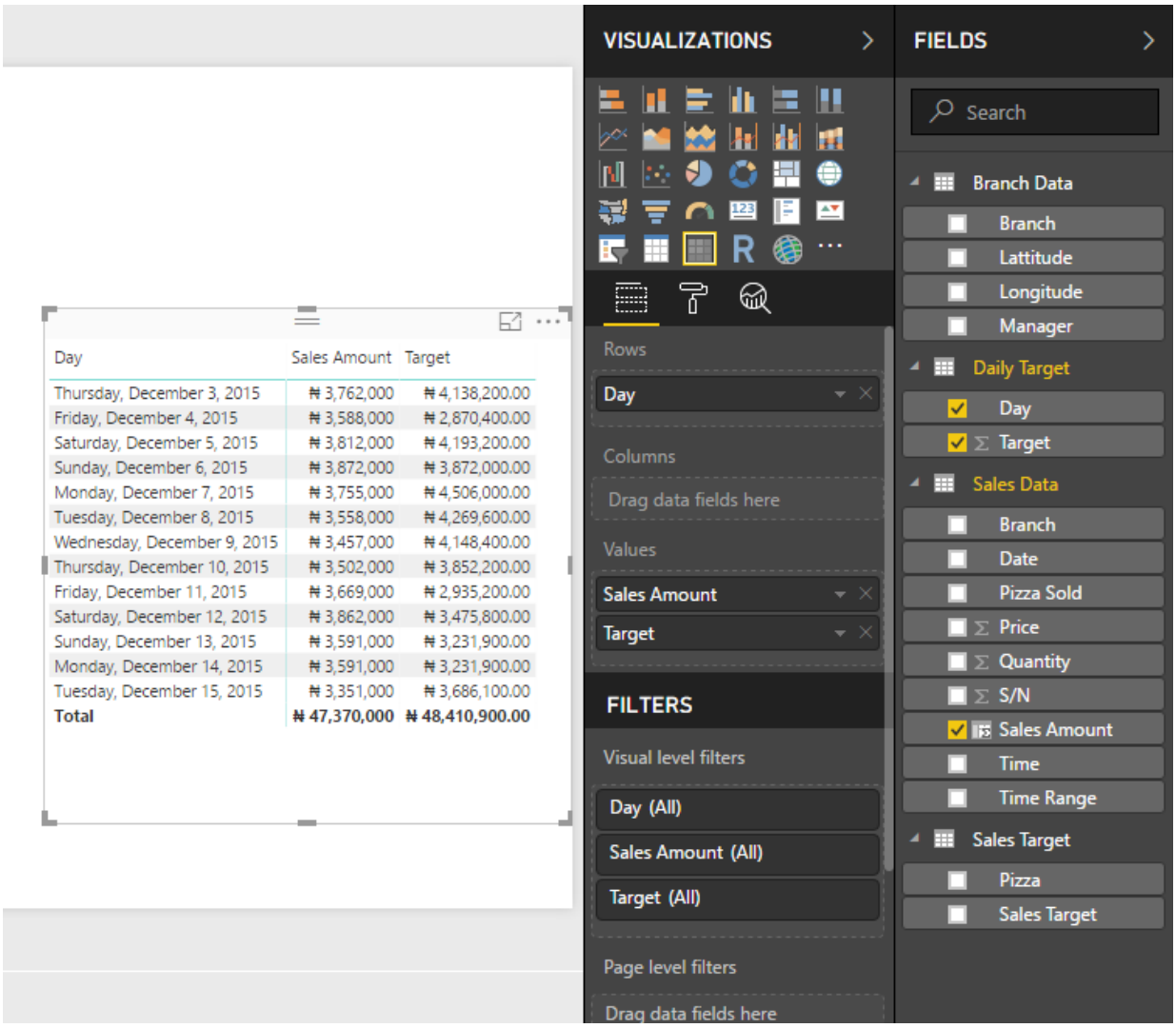


26. **Table**: It is an intuitive table that aggregates the fields you put in intelligently.



Day	Sales Amount	Target
Thursday, December 3, 2015	₦ 3,762,000	₦ 4,138,200.00
Friday, December 4, 2015	₦ 3,588,000	₦ 2,870,400.00
Saturday, December 5, 2015	₦ 3,812,000	₦ 4,193,200.00
Sunday, December 6, 2015	₦ 3,872,000	₦ 3,872,000.00
Monday, December 7, 2015	₦ 3,755,000	₦ 4,506,000.00
Tuesday, December 8, 2015	₦ 3,558,000	₦ 4,269,600.00
Wednesday, December 9, 2015	₦ 3,457,000	₦ 4,148,400.00
Thursday, December 10, 2015	₦ 3,502,000	₦ 3,852,200.00
Friday, December 11, 2015	₦ 3,669,000	₦ 2,935,200.00
Saturday, December 12, 2015	₦ 3,862,000	₦ 3,475,800.00
Sunday, December 13, 2015	₦ 3,591,000	₦ 3,231,900.00
Monday, December 14, 2015	₦ 3,591,000	₦ 3,231,900.00
Tuesday, December 15, 2015	₦ 3,351,000	₦ 3,686,100.00
Total	**₦ 47,370,000**	**₦ 48,410,900.00**

27. **Matrix**: It is exact replica of PivotTable. We have already used it in the last sample project.



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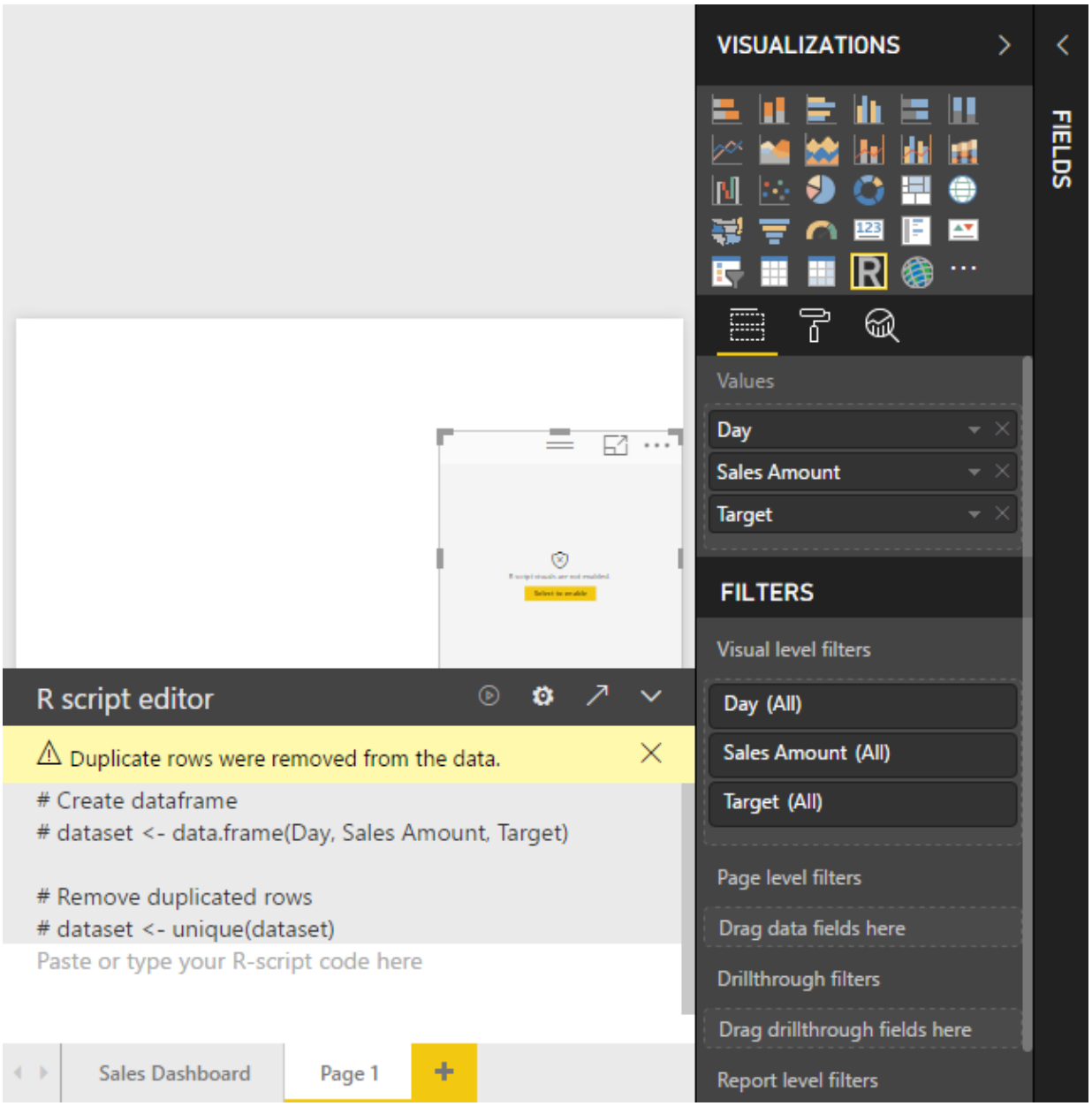
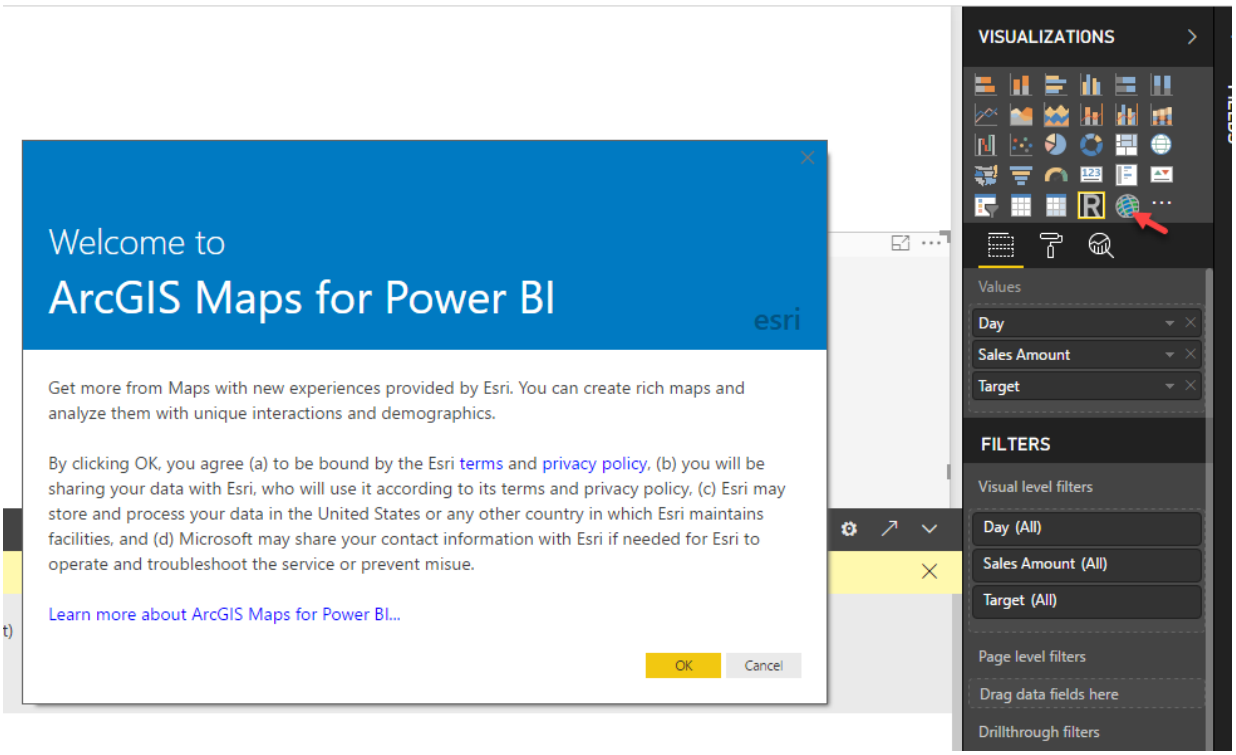
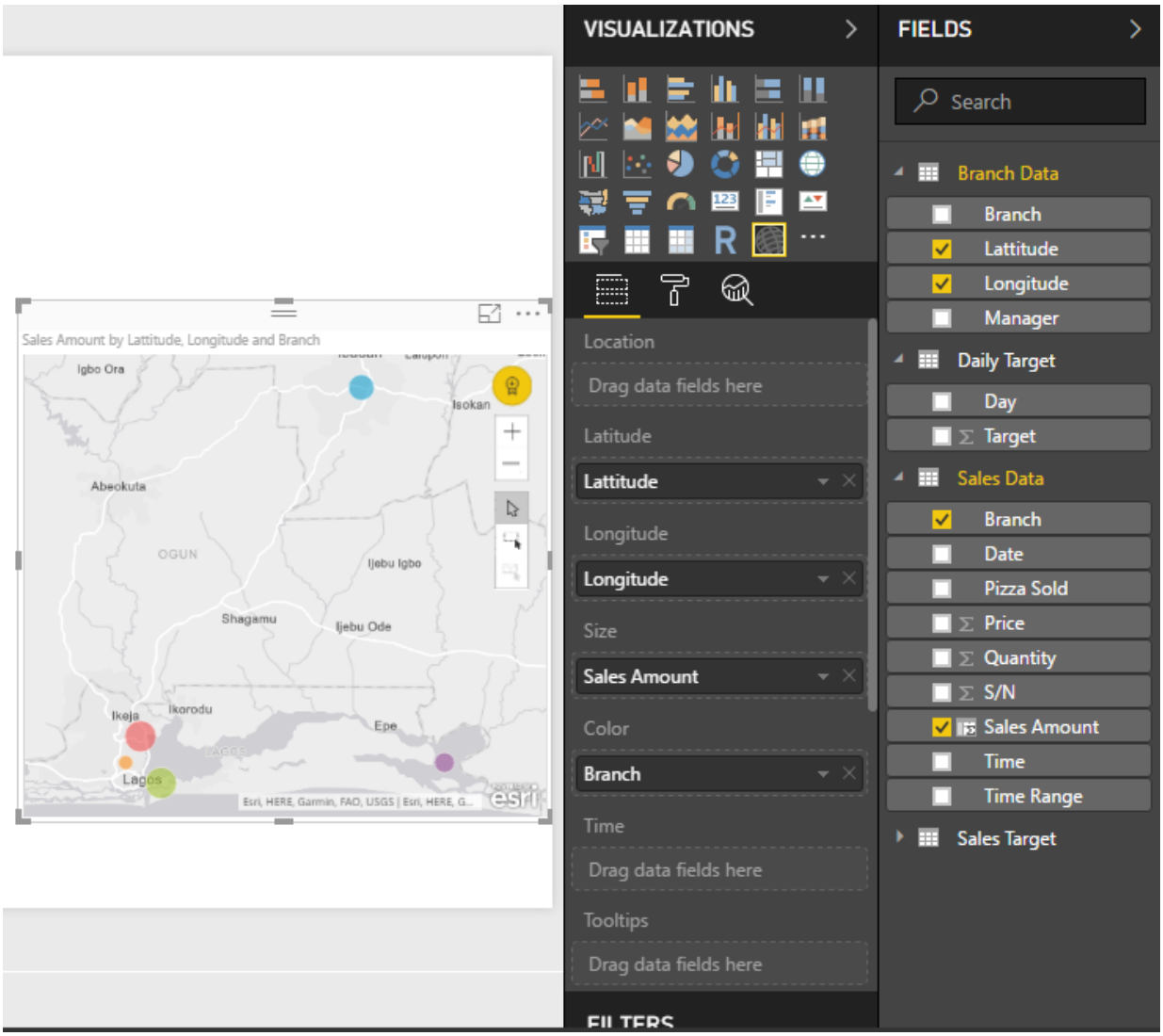
Monday, December 14, 2015	₦ 3,591,000	₦ 3,231,900.00
Tuesday, December 15, 2015	₦ 3,351,000	₦ 3,686,100.00
Total	**₦ 47,370,000**	**₦ 48,410,900.00**

28. **R Script Visual**: This allows you to run R scripts in Power BI. Might be of particular interest to people already proficient in data analysis using R.

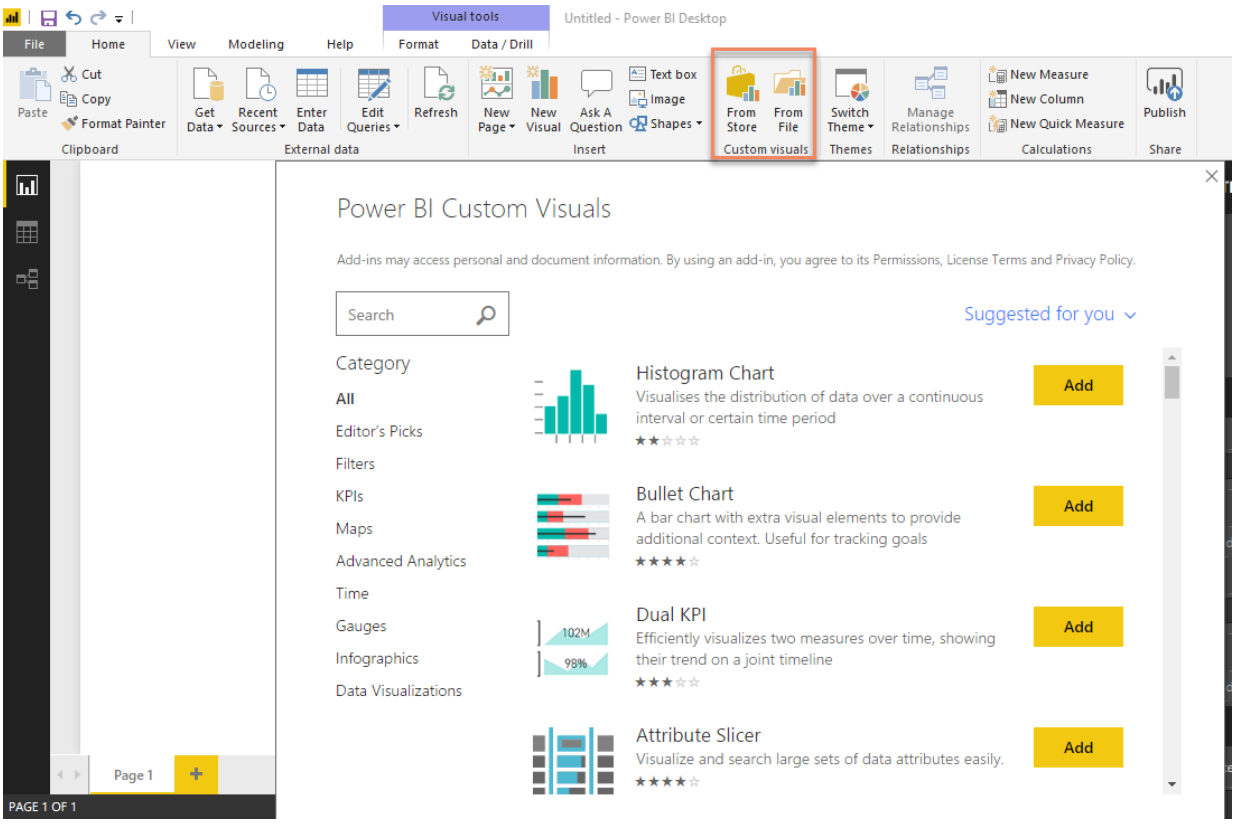


29. **ArcGIS Maps for Power BI:** This is very much like Map but with some peculiar features you might find very useful.


Welcome to
ArcGIS Maps for Power BI
esri
Get more from Maps with new experiences provided by Esri. You can create rich maps and analyze them with unique interactions and demographics.
By clicking OK, you agree (a) to be bound by the Esri terms and privacy policy, (b) you will be sharing your data with Esri, who will use it according to its terms and privacy policy, (c) Esri may store and process your data in the United States or any other country in which Esri maintains facilities, and (d) Microsoft may share your contact information with Esri if needed for Esri to operate and troubleshoot the service or prevent misue.
Learn more about ArcGIS Maps for Power BI...
OK
Cancel
VISUALIZATIONS
Values
Day
Sales Amount
Target
FILTERS
Visual level filters
Day (All)
Sales Amount (All)
Target (All)
Page level filters
Drag data fields here
Drillthrough filters



Lastly, Power BI allows you to access more visuals to use in your reports via Custom Visuals on the Home menu.


Visual tools
Untitled - Power BI Desktop
File
Home
View
Modeling
Help
Format
Data / Drill
Paste
Cut
Copy
Format Painter
Clipboard
Get Data
Recent Sources
Enter Data
Edit Queries
Refresh
External data
New Page
New Visual
Ask A Question
Text box
Image
Shapes
Insert
From Store
From File
Custom visuals
Switch Theme
Themes
Manage Relationships
Relationships
New Measure
New Column
New Quick Measure
Calculations
Publish
Share
Power BI Custom Visuals
Add-ins may access personal and document information. By using an add-in, you agree to its Permissions, License Terms and Privacy Policy.
Search
Suggested for you
Category
All
Editor's Picks
Filters
KPIs
Maps
Advanced Analytics
Time
Gauges
Infographics
Data Visualizations
Histogram Chart
Visualises the distribution of data over a continuous interval or certain time period
Add
Bullet Chart
A bar chart with extra visual elements to provide additional context. Useful for tracking goals
Add
Dual KPI
Efficiently visualizes two measures over time, showing their trend on a joint timeline
102M
98%
Add
Attribute Slicer
Visualize and search large sets of data attributes easily.
Add
Page 1
PAGE 1 OF 1

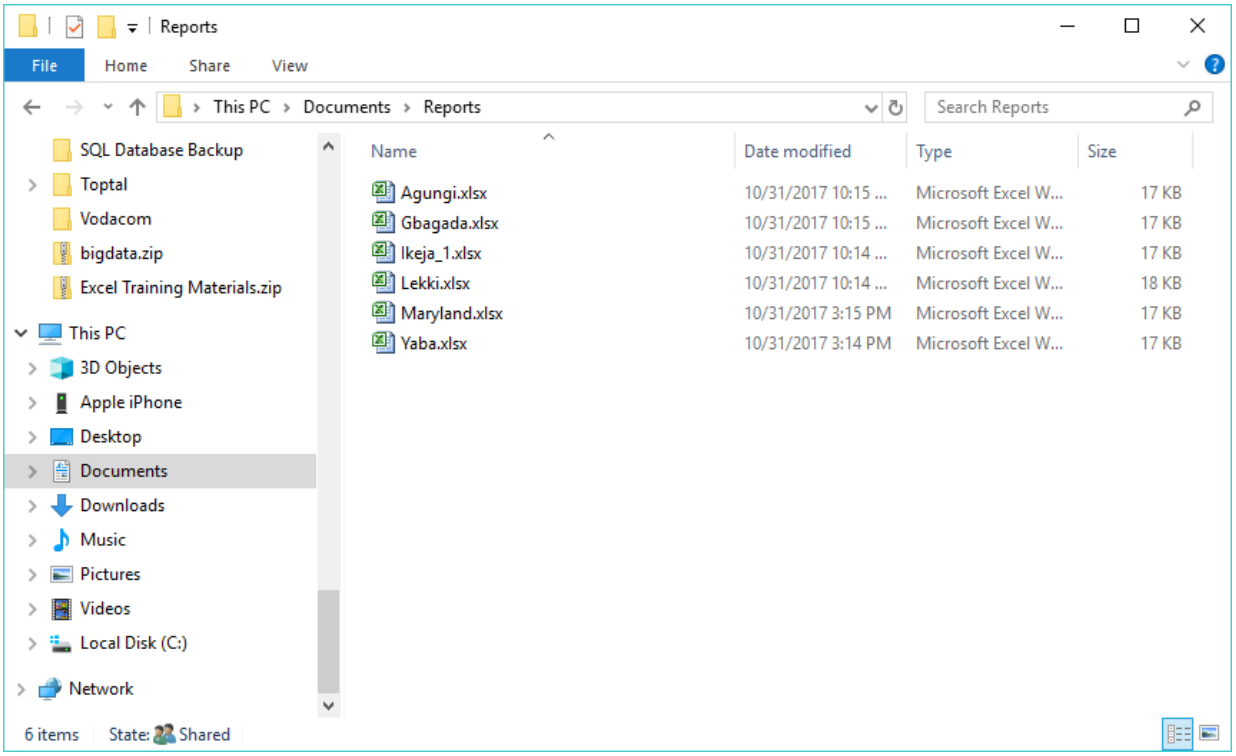
Data Transformation with Query Editor

Query Editor is the main tool for shaping your data into the right structure for your analysis. And in the following segments I am going to touch on the very common tasks you need to be proficient at carrying out with the Query Editor.

Combining Data From Different Files

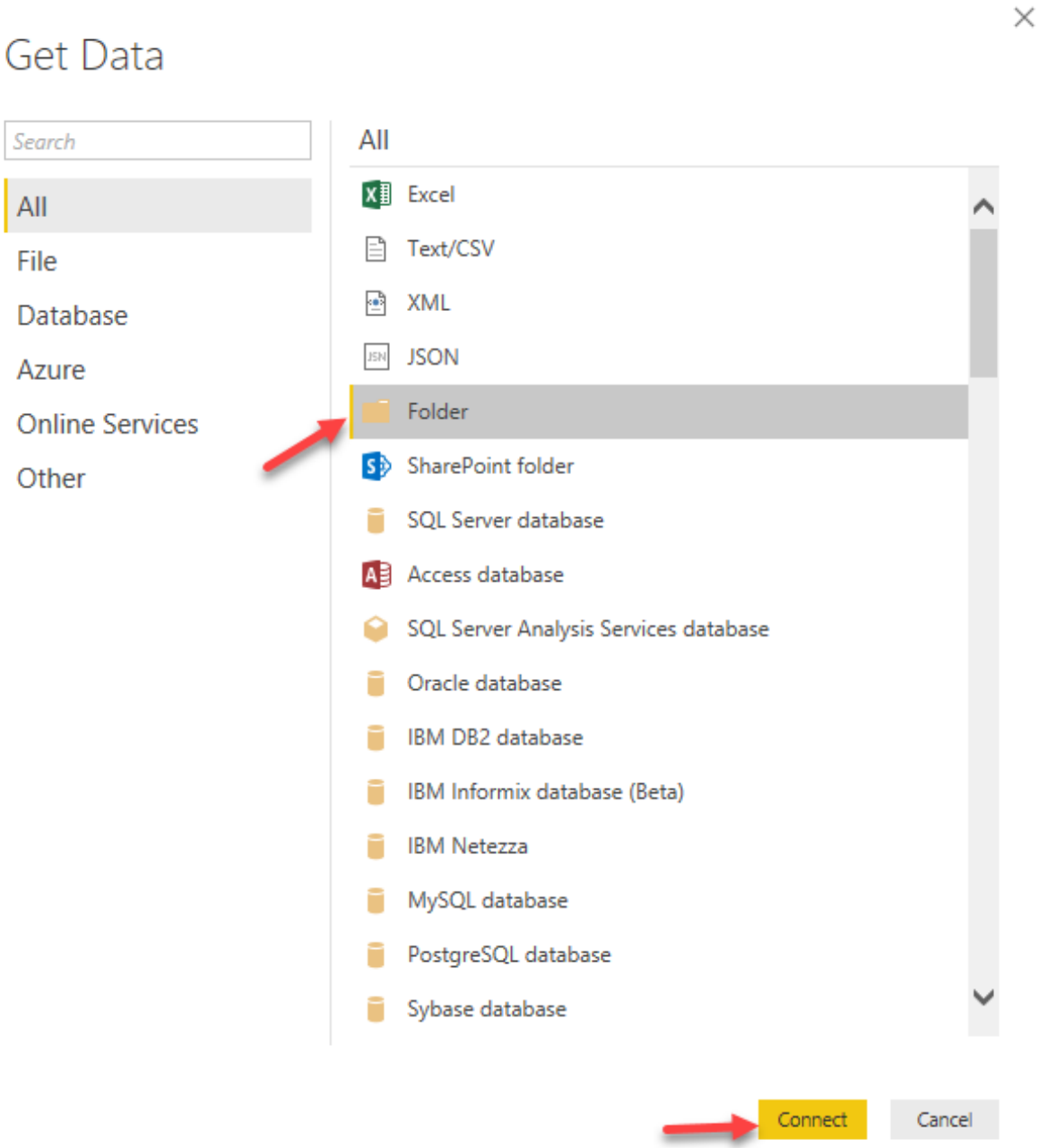
Power BI allows you to combine data from different sources easily. In this demonstration, I will show you how to combine sales data from different branches of a Pizza restaurant easily and even automatically capture new data from other branches as they come in.

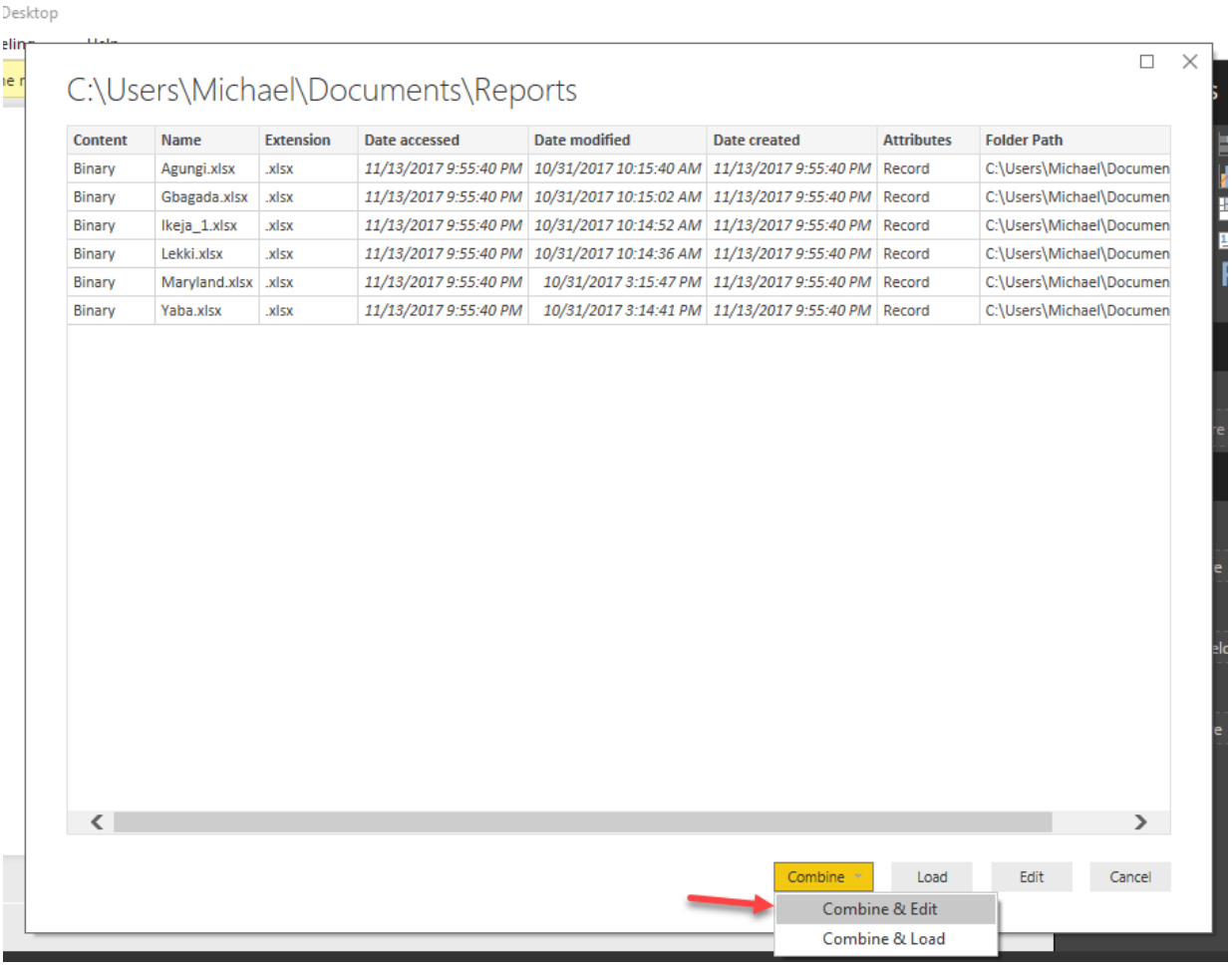
So say we have all the branch sales data saved in a specific folder. You can download the practice data at https://drive.google.com/drive/folders/1BiffqIlzezavfHwJmdEs5AT6saT5nmcu?usp=sharing



And I want to bring them all into Power BI and combine them to get the overall sales data. Well, it's very easy.

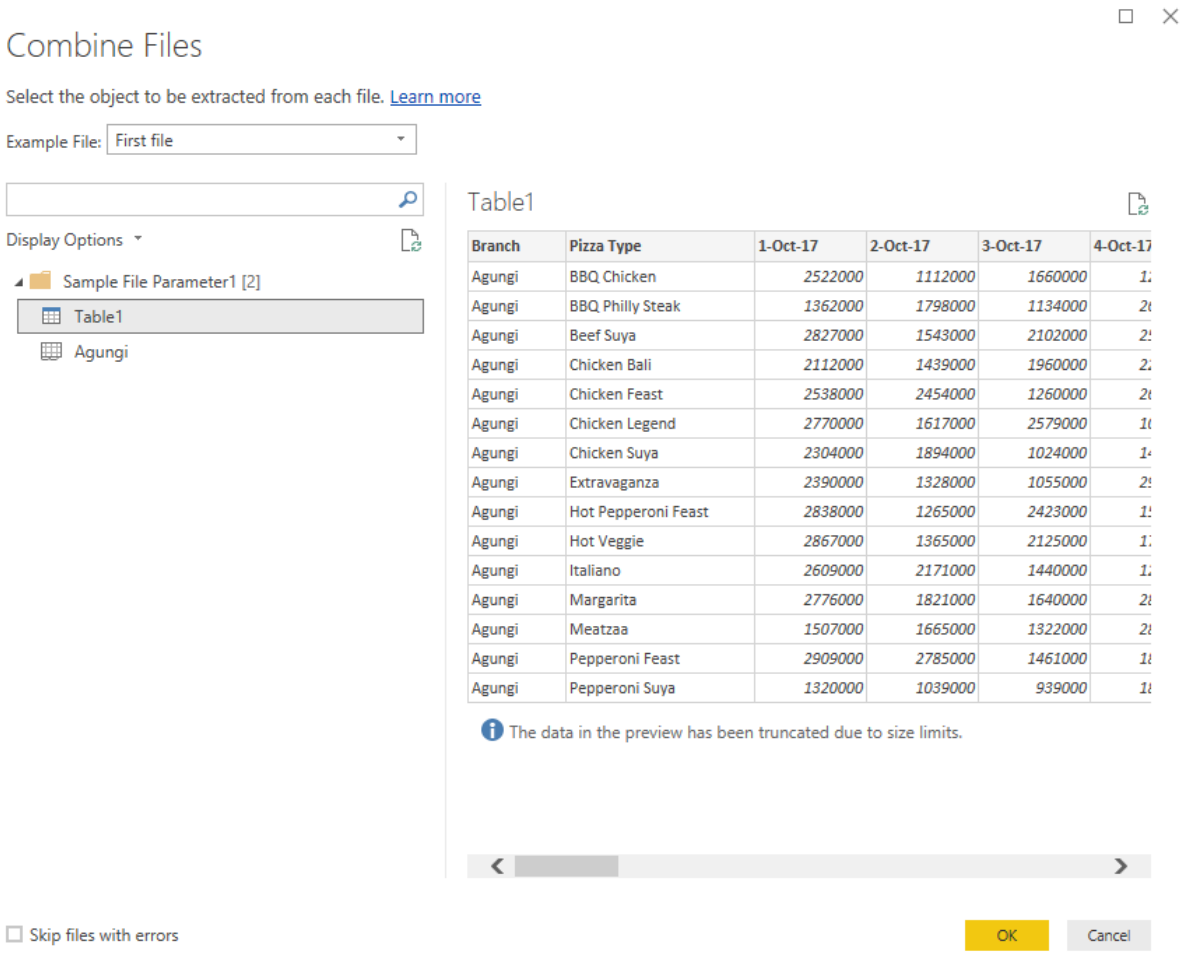
Via Get Data, select the folder that houses the data files.


Get Data
Search
All
File
Database
Azure
Online Services
Other
All
Excel
Text/CSV
XML
JSON
Folder
SharePoint folder
SQL Server database
Access database
SQL Server Analysis Services database
Oracle database
IBM DB2 database
IBM Informix database (Beta)
IBM Netezza
MySQL database
PostgreSQL database
Sybase database
Connect
Cancel

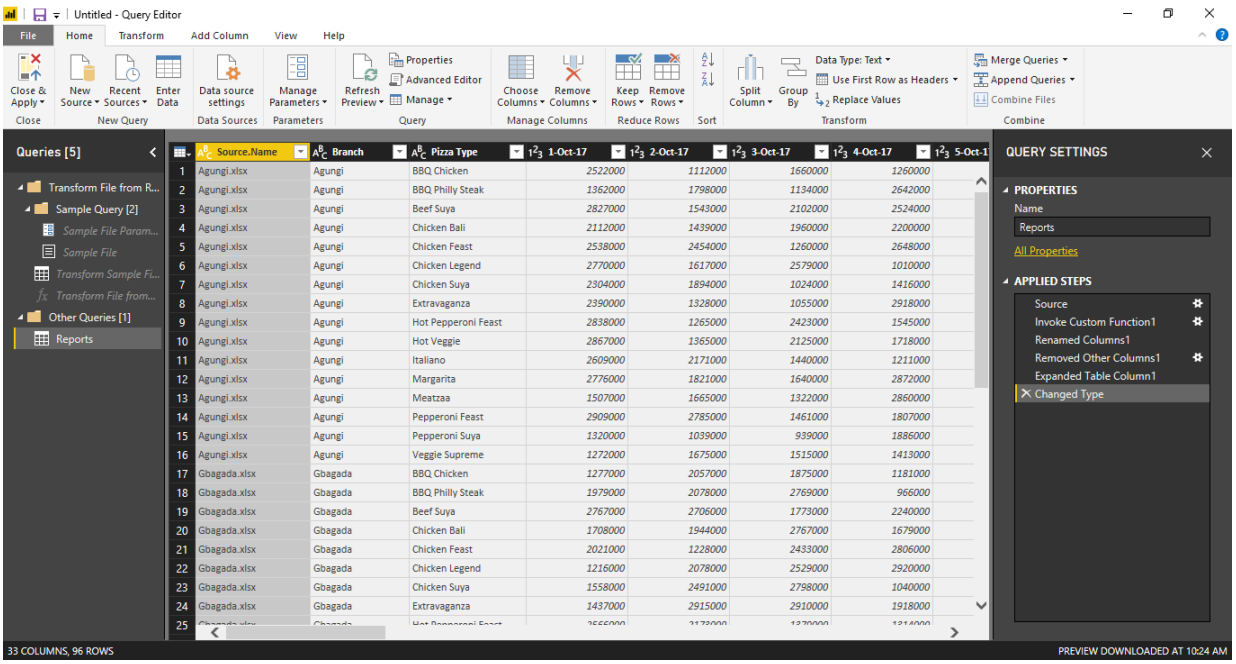

Desktop
C:\Users\Michael\Documents\Reports
Content Name Extension Date accessed Date modified Date created Attributes Folder Path
Binary Agungi.xlsx .xlsx 11/13/2017 9:55:40 PM 10/31/2017 10:15:40 AM 11/13/2017 9:55:40 PM Record C:\Users\Michael\Documen
Binary Gbagada.xlsx .xlsx 11/13/2017 9:55:40 PM 10/31/2017 10:15:02 AM 11/13/2017 9:55:40 PM Record C:\Users\Michael\Documen
Binary Ikeja_1.xlsx .xlsx 11/13/2017 9:55:40 PM 10/31/2017 10:14:52 AM 11/13/2017 9:55:40 PM Record C:\Users\Michael\Documen
Binary Lekki.xlsx .xlsx 11/13/2017 9:55:40 PM 10/31/2017 10:14:36 AM 11/13/2017 9:55:40 PM Record C:\Users\Michael\Documen
Binary Maryland.xlsx .xlsx 11/13/2017 9:55:40 PM 10/31/2017 3:15:47 PM 11/13/2017 9:55:40 PM Record C:\Users\Michael\Documen
Binary Yaba.xlsx .xlsx 11/13/2017 9:55:40 PM 10/31/2017 3:14:41 PM 11/13/2017 9:55:40 PM Record C:\Users\Michael\Documen
Combine
Load
Edit
Cancel
Combine & Edit
Combine & Load

I hope you remember why I always recommend Edit, which is the reason I am selecting Combine & Edit.

In the window that comes up next, you confirm the data you want to bring in using the first file as a prototype. At the bottom left, you can set it to skip files with errors. I ignore it for now and go straight to OK.

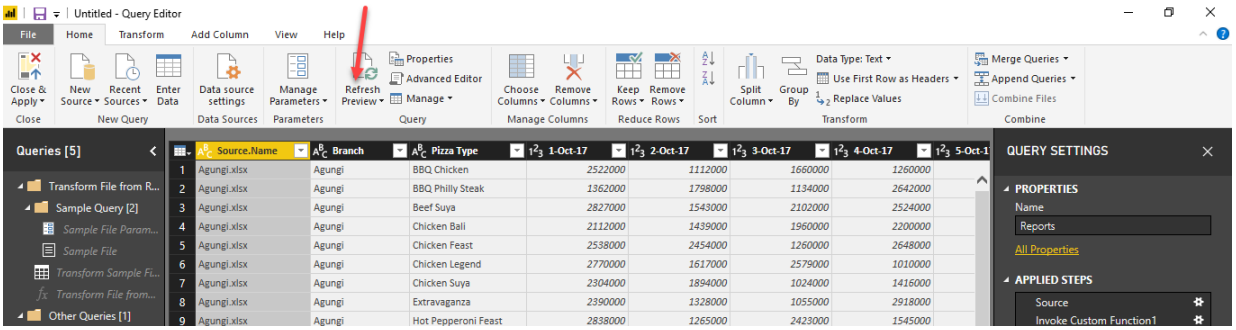

Combine Files
Select the object to be extracted from each file. Learn more
Example File: First file
Display Options
Sample File Parameter1 [2]
Table1
Agungi
Table1
Branch | Pizza Type | 1-Oct-17 | 2-Oct-17 | 3-Oct-17 | 4-Oct-17
Agungi | BBQ Chicken | 2522000 | 1112000 | 1660000
Agungi | BBQ Philly Steak | 1362000 | 1798000 | 1134000
Agungi | Beef Suya | 2827000 | 1543000 | 2102000
Agungi | Chicken Bali | 2112000 | 1439000 | 1960000
Agungi | Chicken Feast | 2538000 | 2454000 | 1260000
Agungi | Chicken Legend | 2770000 | 1617000 | 2579000
Agungi | Chicken Suya | 2304000 | 1894000 | 1024000
Agungi | Extravaganza | 2390000 | 1328000 | 1055000
Agungi | Hot Pepperoni Feast | 2838000 | 1265000 | 2423000
Agungi | Hot Veggie | 2867000 | 1365000 | 2125000
Agungi | Italiano | 2609000 | 2171000 | 1440000
Agungi | Margarita | 2776000 | 1821000 | 1640000
Agungi | Meatzaa | 1507000 | 1665000 | 1322000
Agungi | Pepperoni Feast | 2909000 | 2785000 | 1461000
Agungi | Pepperoni Suya | 1320000 | 1039000 | 939000
The data in the preview has been truncated due to size limits.
Skip files with errors
OK
Cancel

The Query Editor window opens and you will see that it has combined the data from the different files in the folder.

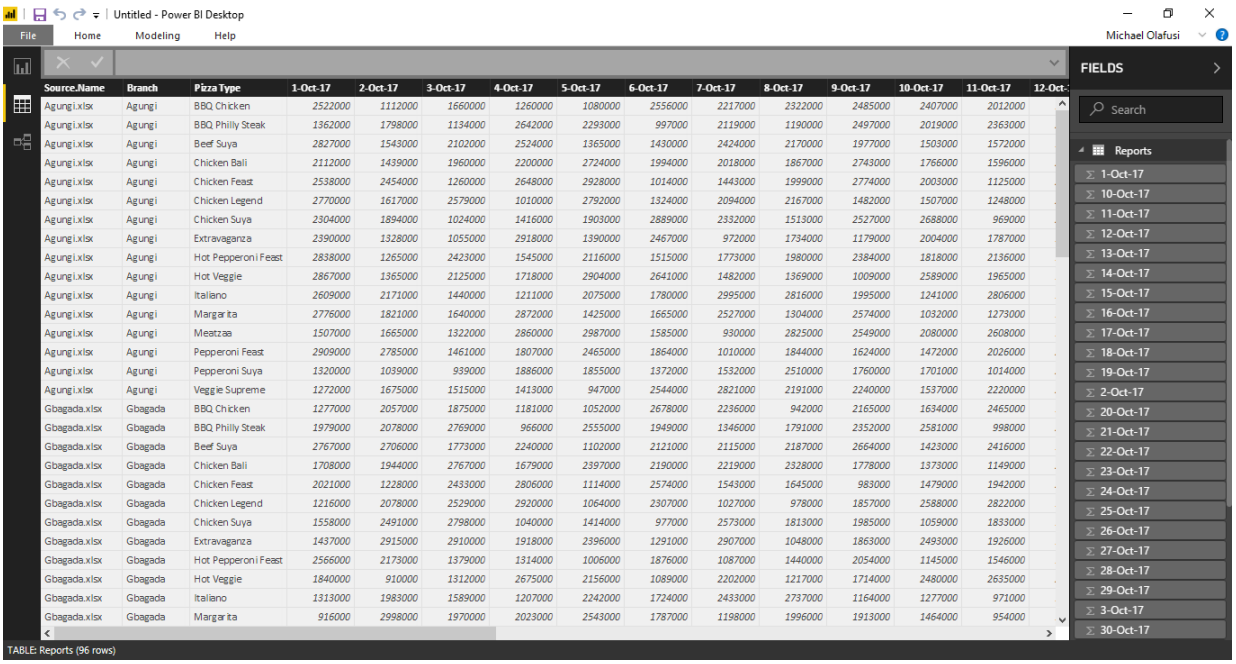


After examining that all is as I want it — no irrelevant columns to remove and no unneeded rows to filter out — I then click Close & Apply.

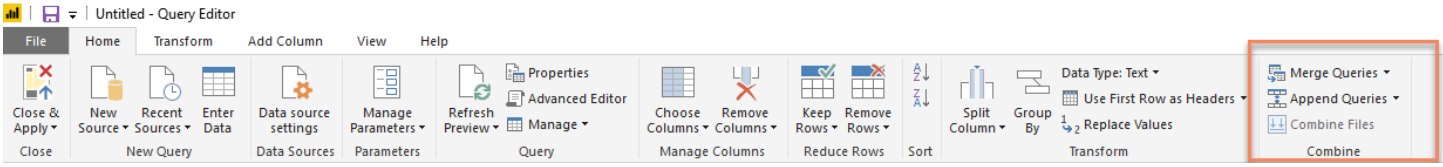
Now all the data is loaded into the Data Model. And if any new branch is added to the folder or new data added to existing files in the folder, all you need to do to bring in those data is to refresh in the Query Editor and do Close & Apply.



And below is how the data looks in the Data Model.

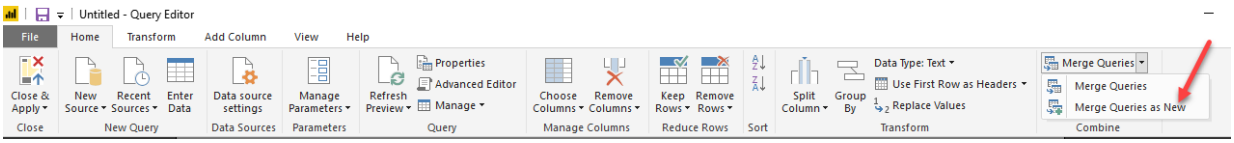


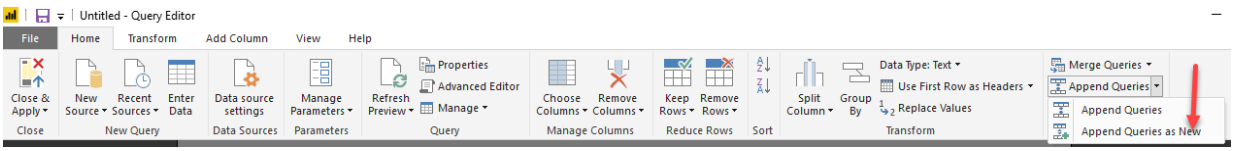
Alternatively, one can load in all the individual files or tables and do the combining right from within the Query Editor. This method may be the only way to combine data from different parent sources (different folders, different database, or even a mix of different source types).



You will see the combine tab under the Home menu and at the extreme right. You also get extra options of how you'll like to combine the files — merge queries or append queries. Merge tries to not duplicate entries across the individual data files (meaning if one record is in the first file and the third file, it skips the one in the third file). Append doesn't examine the entries in the files, it just appends all the files as one.

Lastly, if you want to keep all the source files data separate from the combined one, then do Merge Queries as New or Append Queries as New.

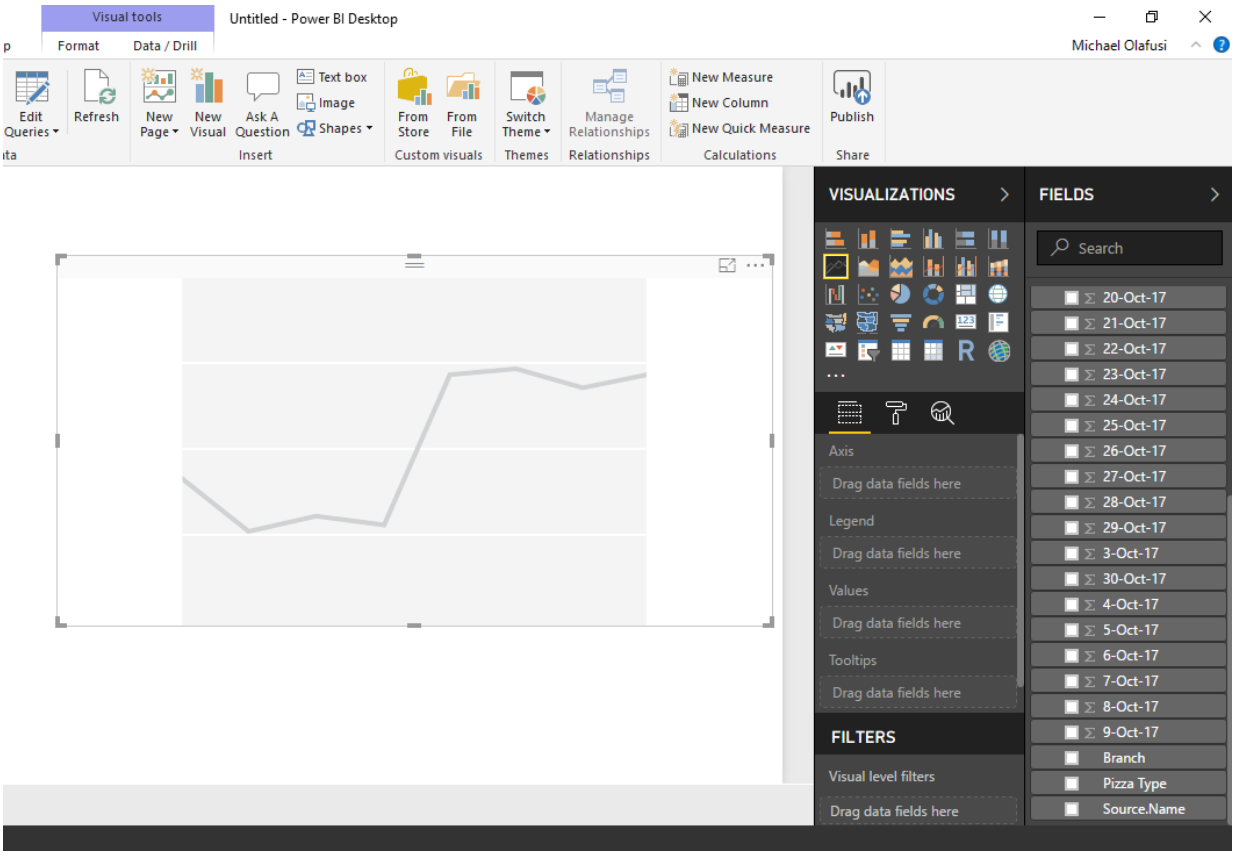




Unpivot: A Powerful Tool To Know

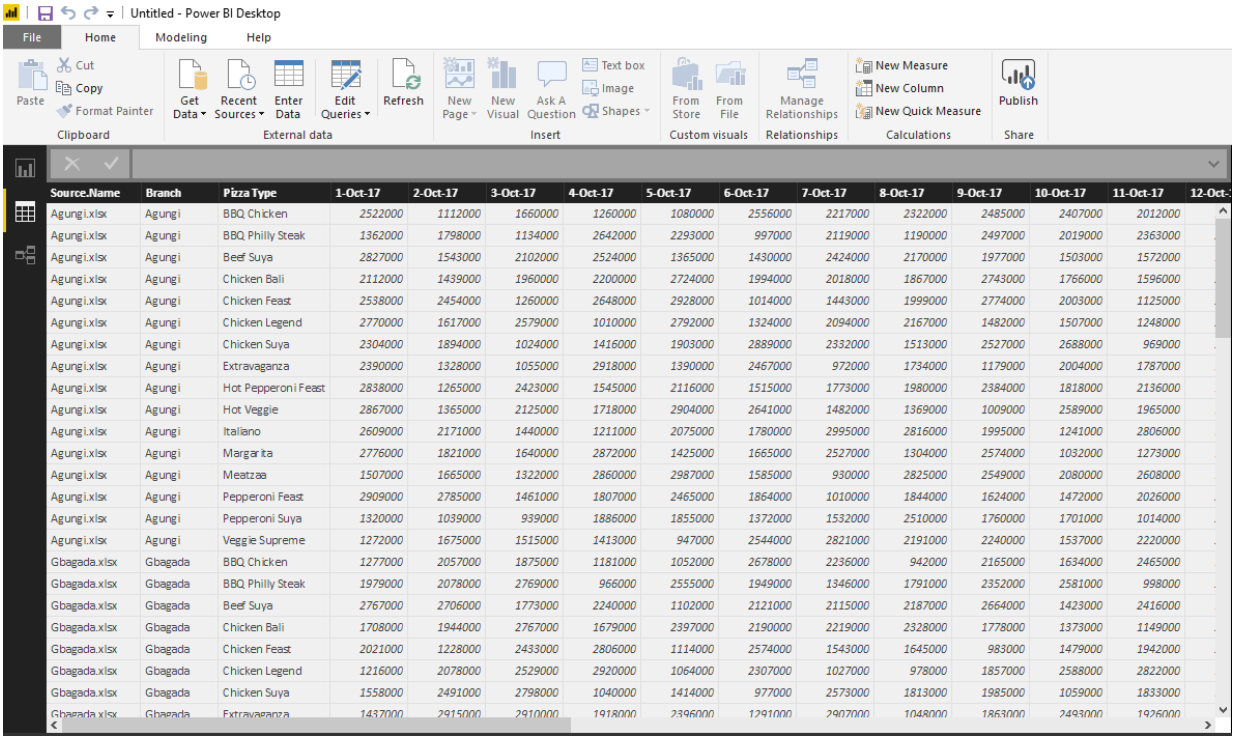
If you've used Excel a lot then you'll be familiar with PivotTables and might wonder what unpivot means. Well, unpivot is one of those Power BI tools that is better to show how it works on a real life-like demo than using many words to explain.

Continuing with our sales data analysis demo. We have already brought in the combined data into the Data Model, it would make sense to do a line chart of the total daily sales by branch.



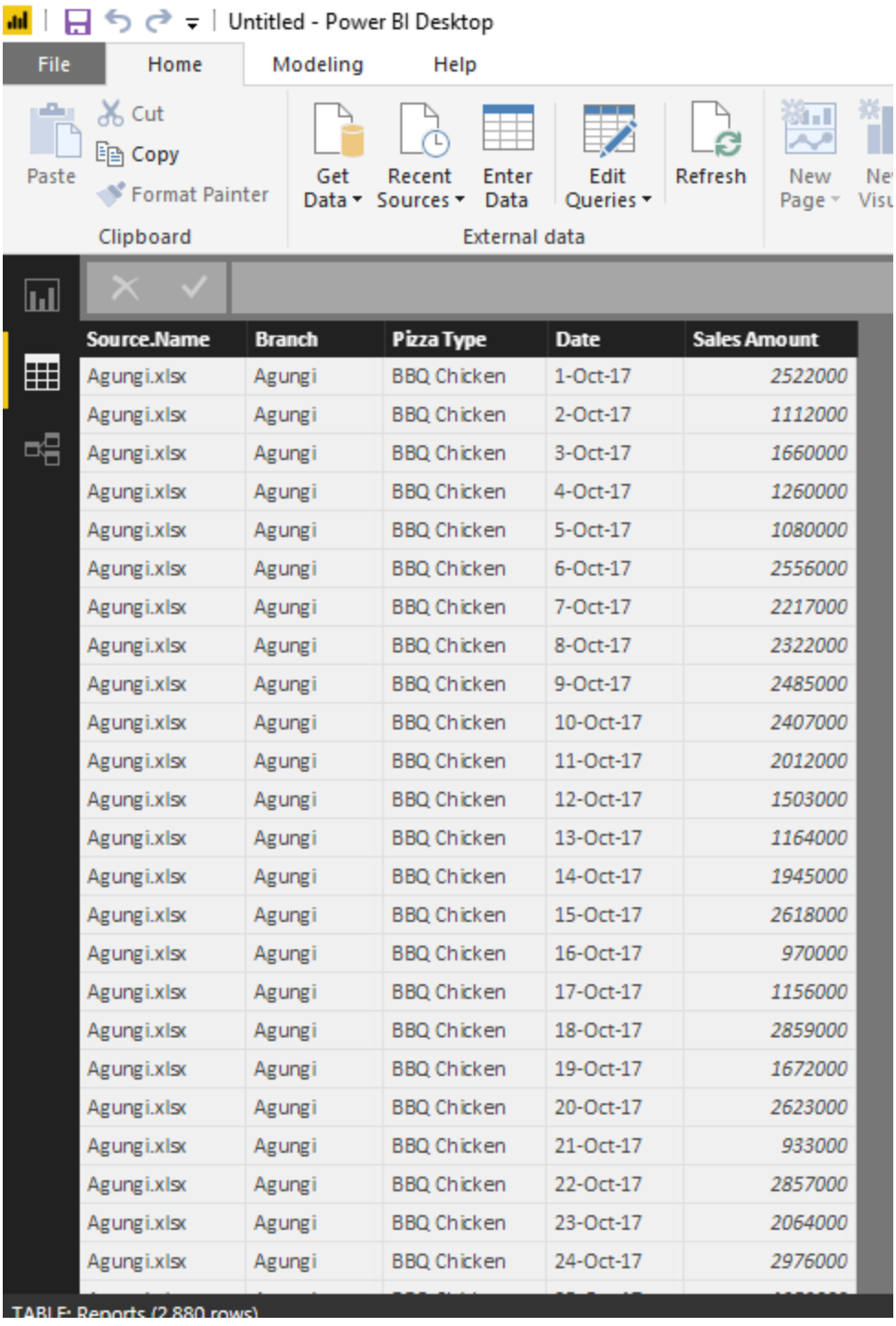
But it seems impossible to do. I would need to drag the date field to Axis, the branch field to Legend and the sales amount field to Values. It is only Branch field I have. The dates are not put in one single field but spread as a separate field for each date with sales figure underneath as values.

In order to achieve my sales line chart, I need to transform the data from:



Source.Name	Branch	Pizza Type	1-Oct-17	2-Oct-17	3-Oct-17	4-Oct-17	5-Oct-17	6-Oct-17	7-Oct-17	8-Oct-17	9-Oct-17	10-Oct-17	11-Oct-17	12-Oct-
Agungi.xlsx	Agungi	BBQ Chicken	2522000	1112000	1660000	1260000	1080000	2556000	2217000	2322000	2485000	2407000	2012000	
Agungi.xlsx	Agungi	BBQ Philly Steak	1362000	1798000	1134000	2642000	2293000	997000	2119000	1190000	2497000	2019000	2363000	
Agungi.xlsx	Agungi	Beef Suya	2827000	1543000	2102000	2524000	1365000	1430000	2424000	2170000	1977000	1503000	1572000	
Agungi.xlsx	Agungi	Chicken Bali	2112000	1439000	1960000	2200000	2724000	1994000	2018000	1867000	2743000	1766000	1596000	
Agungi.xlsx	Agungi	Chicken Feast	2538000	2454000	1260000	2648000	2928000	1014000	1443000	1999000	2774000	2003000	1125000	
Agungi.xlsx	Agungi	Chicken Legend	2770000	1617000	2579000	1010000	2792000	1324000	2094000	2167000	1482000	1507000	1248000	
Agungi.xlsx	Agungi	Chicken Suya	2304000	1894000	1024000	1416000	1903000	2889000	2332000	1513000	2527000	2688000	969000	
Agungi.xlsx	Agungi	Extravaganza	2390000	1328000	1055000	2918000	1390000	2467000	972000	1734000	1179000	2004000	1787000	
Agungi.xlsx	Agungi	Hot Pepperoni Feast	2838000	1265000	2423000	1545000	2116000	1515000	1773000	1980000	2384000	1818000	2136000	
Agungi.xlsx	Agungi	Hot Veggie	2867000	1365000	2125000	1718000	2904000	2641000	1482000	1369000	1009000	2589000	1965000	
Agungi.xlsx	Agungi	Italiano	2609000	2171000	1440000	1211000	2075000	1780000	2995000	2816000	1995000	1241000	2806000	
Agungi.xlsx	Agungi	Margarita	2776000	1821000	1640000	2872000	1425000	1665000	2527000	1304000	2574000	1032000	1273000	
Agungi.xlsx	Agungi	Meatzaa	1507000	1665000	1322000	2860000	2987000	1585000	930000	2825000	2549000	2080000	2608000	
Agungi.xlsx	Agungi	Pepperoni Feast	2909000	2785000	1461000	1807000	2465000	1864000	1010000	1844000	1624000	1472000	2026000	
Agungi.xlsx	Agungi	Pepperoni Suya	1320000	1039000	939000	1886000	1855000	1372000	1532000	2510000	1760000	1701000	1014000	
Agungi.xlsx	Agungi	Veggie Supreme	1272000	1675000	1515000	1413000	947000	2544000	2821000	2191000	2240000	1537000	2220000	
Gbagada.xlsx	Gbagada	BBQ Chicken	1277000	2057000	1875000	1181000	1052000	2678000	2236000	942000	2165000	1634000	2465000	
Gbagada.xlsx	Gbagada	BBQ Philly Steak	1979000	2078000	2769000	966000	2555000	1949000	1346000	1791000	2352000	2581000	998000	
Gbagada.xlsx	Gbagada	Beef Suya	2767000	2706000	1773000	2240000	1102000	2121000	2115000	2187000	2664000	1423000	2416000	
Gbagada.xlsx	Gbagada	Chicken Bali	1708000	1944000	2767000	1679000	2397000	2190000	2219000	2328000	1778000	1373000	1149000	
Gbagada.xlsx	Gbagada	Chicken Feast	2021000	1228000	2433000	2806000	1114000	2574000	1543000	1645000	983000	1479000	1942000	
Gbagada.xlsx	Gbagada	Chicken Legend	1216000	2078000	2529000	2920000	1064000	2307000	1027000	978000	1857000	2588000	2822000	
Gbagada.xlsx	Gbagada	Chicken Suya	1558000	2491000	2798000	1040000	1414000	977000	2573000	1813000	1985000	1059000	1833000	
Gbagada.xlsx	Gbagada	Extravaganza	1437000	2915000	2910000	1918000	2396000	1291000	2907000	1048000	1863000	2493000	1926000	

Into this:



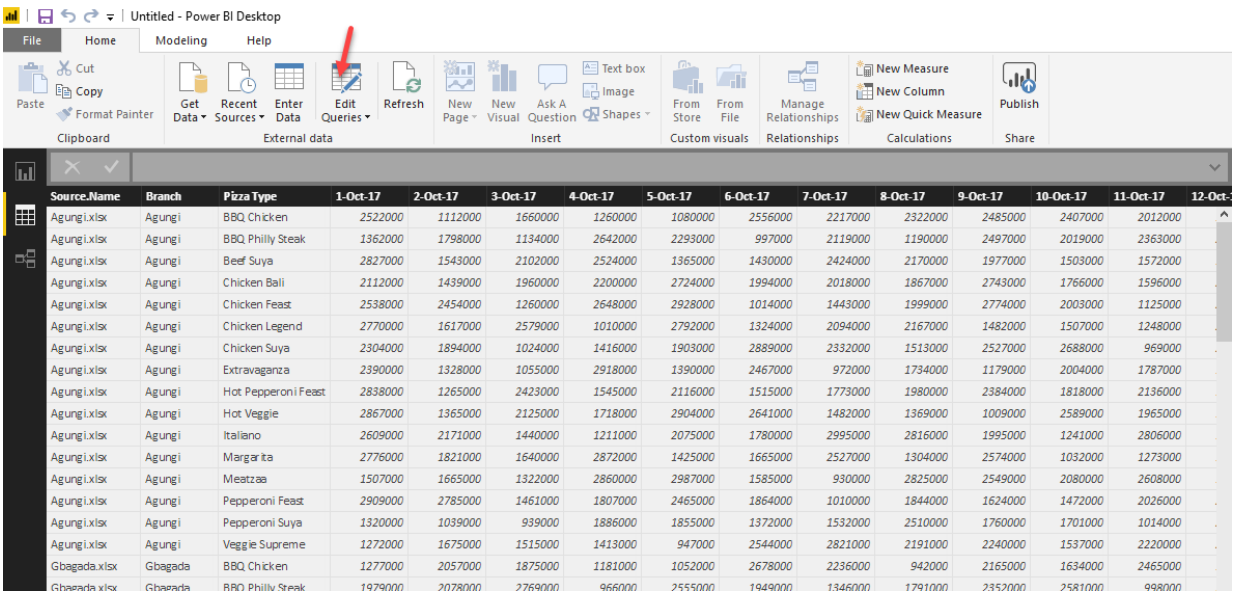
Source.Name	Branch	Pizza Type	Date	Sales Amount
Agungi.xlsx	Agungi	BBQ Chicken	1-Oct-17	2522000
Agungi.xlsx	Agungi	BBQ Chicken	2-Oct-17	1112000
Agungi.xlsx	Agungi	BBQ Chicken	3-Oct-17	1660000
Agungi.xlsx	Agungi	BBQ Chicken	4-Oct-17	1260000
Agungi.xlsx	Agungi	BBQ Chicken	5-Oct-17	1080000
Agungi.xlsx	Agungi	BBQ Chicken	6-Oct-17	2556000
Agungi.xlsx	Agungi	BBQ Chicken	7-Oct-17	2217000
Agungi.xlsx	Agungi	BBQ Chicken	8-Oct-17	2322000
Agungi.xlsx	Agungi	BBQ Chicken	9-Oct-17	2485000
Agungi.xlsx	Agungi	BBQ Chicken	10-Oct-17	2407000
Agungi.xlsx	Agungi	BBQ Chicken	11-Oct-17	2012000
Agungi.xlsx	Agungi	BBQ Chicken	12-Oct-17	1503000
Agungi.xlsx	Agungi	BBQ Chicken	13-Oct-17	1164000
Agungi.xlsx	Agungi	BBQ Chicken	14-Oct-17	1945000
Agungi.xlsx	Agungi	BBQ Chicken	15-Oct-17	2618000
Agungi.xlsx	Agungi	BBQ Chicken	16-Oct-17	970000
Agungi.xlsx	Agungi	BBQ Chicken	17-Oct-17	1156000
Agungi.xlsx	Agungi	BBQ Chicken	18-Oct-17	2859000
Agungi.xlsx	Agungi	BBQ Chicken	19-Oct-17	1672000
Agungi.xlsx	Agungi	BBQ Chicken	20-Oct-17	2623000
Agungi.xlsx	Agungi	BBQ Chicken	21-Oct-17	933000
Agungi.xlsx	Agungi	BBQ Chicken	22-Oct-17	2857000
Agungi.xlsx	Agungi	BBQ Chicken	23-Oct-17	2064000
Agungi.xlsx	Agungi	BBQ Chicken	24-Oct-17	2976000

TABLE: Reports (2,880 rows)

And that is what unpivot does for us.

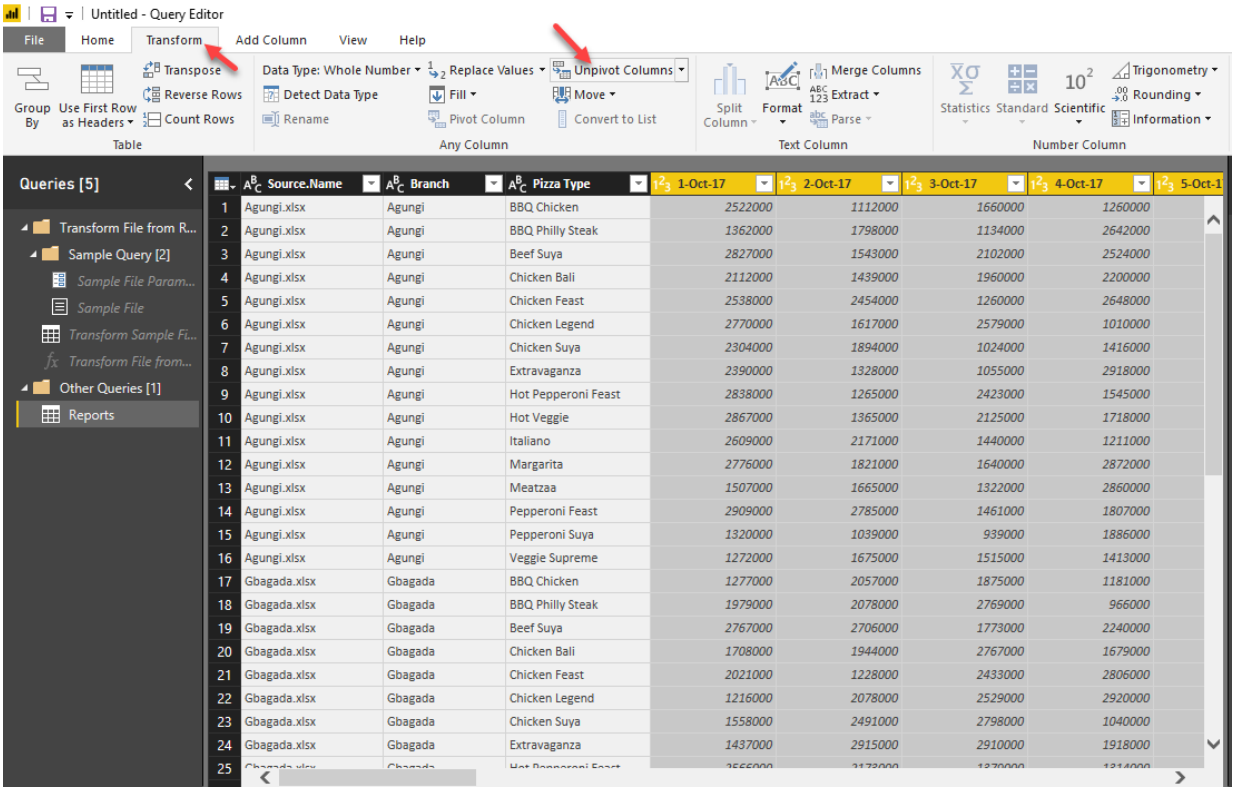
So now let's do it from scratch.

We head back to the Query Editor.



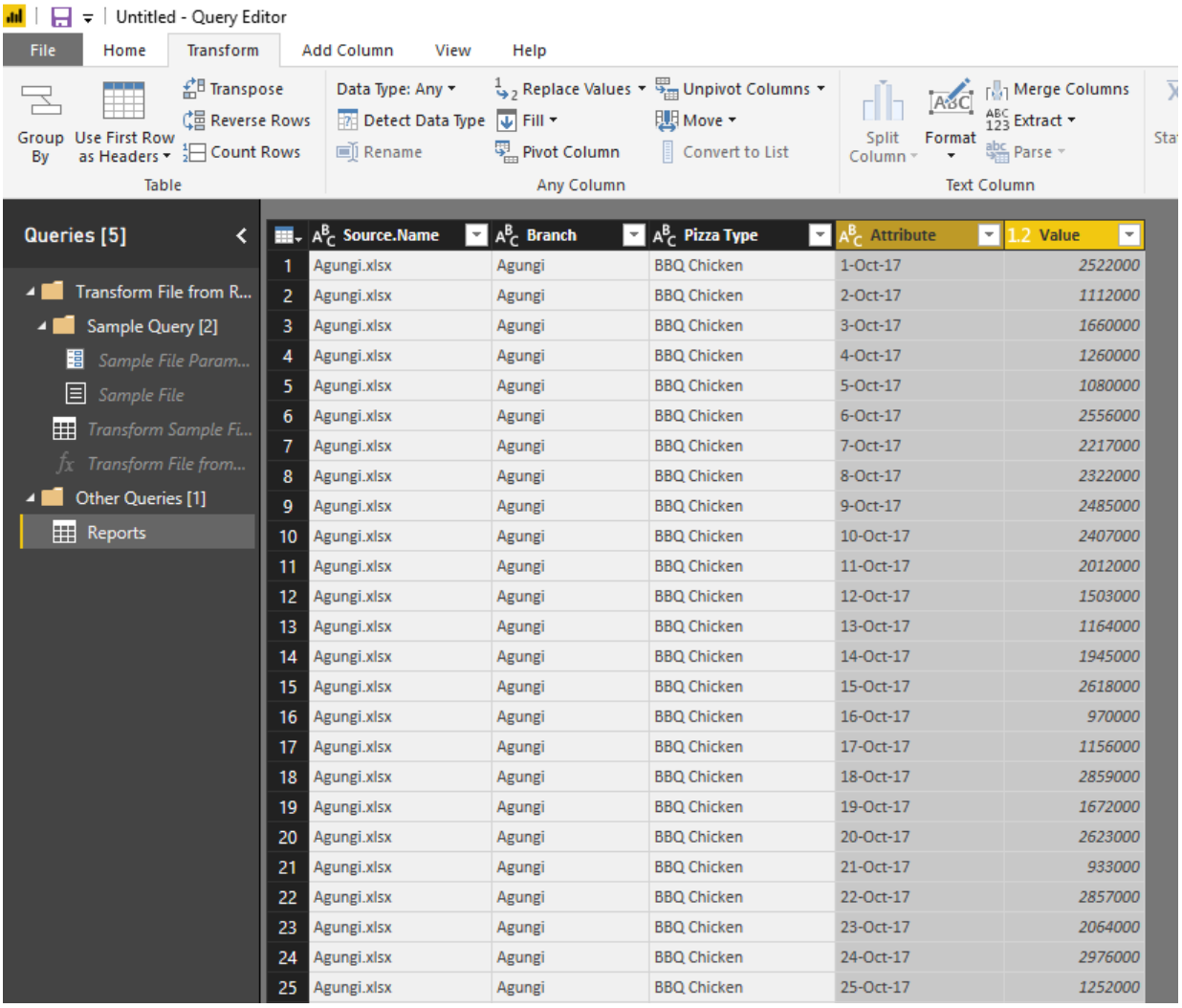
Source.Name	Branch	Pizza Type	1-Oct-17	2-Oct-17	3-Oct-17	4-Oct-17	5-Oct-17	6-Oct-17	7-Oct-17	8-Oct-17	9-Oct-17	10-Oct-17	11-Oct-17	12-Oct-
Agungi.xlsx	Agungi	BBQ Chicken	2522000	1112000	1660000	1260000	1080000	2556000	2217000	2322000	2485000	2407000	2012000	
Agungi.xlsx	Agungi	BBQ Philly Steak	1362000	1798000	1134000	2642000	2293000	997000	2119000	1190000	2497000	2019000	2363000	
Agungi.xlsx	Agungi	Beef Suya	2827000	1543000	2102000	2524000	1365000	1430000	2424000	2170000	1977000	1503000	1572000	
Agungi.xlsx	Agungi	Chicken Bali	2112000	1439000	1960000	2200000	2724000	1994000	2018000	1867000	2743000	1766000	1596000	
Agungi.xlsx	Agungi	Chicken Feast	2538000	2454000	1260000	2648000	2928000	1014000	1443000	1999000	2774000	2003000	1125000	
Agungi.xlsx	Agungi	Chicken Legend	2770000	1617000	2579000	1010000	2792000	1324000	2094000	2167000	1482000	1507000	1248000	
Agungi.xlsx	Agungi	Chicken Suya	2304000	1894000	1024000	1416000	1903000	2889000	2332000	1513000	2527000	2688000	969000	
Agungi.xlsx	Agungi	Extravaganza	2390000	1328000	1055000	2918000	1390000	2467000	972000	1734000	1179000	2004000	1787000	
Agungi.xlsx	Agungi	Hot Pepperoni Feast	2838000	1265000	2423000	1545000	2116000	1515000	1773000	1980000	2384000	1818000	2136000	
Agungi.xlsx	Agungi	Hot Veggie	2867000	1365000	2125000	1718000	2904000	2641000	1482000	1369000	1009000	2589000	1965000	
Agungi.xlsx	Agungi	Italiano	2609000	2171000	1440000	1211000	2075000	1780000	2995000	2816000	1995000	1241000	2806000	
Agungi.xlsx	Agungi	Margarita	2776000	1821000	1640000	2872000	1425000	1665000	2527000	1304000	2574000	1032000	1273000	
Agungi.xlsx	Agungi	Meatzaa	1507000	1665000	1322000	2860000	2987000	1585000	930000	2825000	2549000	2080000	2608000	
Agungi.xlsx	Agungi	Pepperoni Feast	2909000	2785000	1461000	1807000	2465000	1864000	1010000	1844000	1624000	1472000	2026000	
Agungi.xlsx	Agungi	Pepperoni Suya	1320000	1039000	939000	1886000	1855000	1372000	1532000	2510000	1760000	1701000	1014000	
Agungi.xlsx	Agungi	Veggie Supreme	1272000	1675000	1515000	1413000	947000	2544000	2821000	2191000	2240000	1537000	2220000	
Gbagada.xlsx	Gbagada	BBQ Chicken	1277000	2057000	1875000	1181000	1052000	2678000	2236000	942000	2165000	1634000	2465000	
Gbagada.xlsx	Gbagada	BBQ Philly Steak	1979000	2078000	2769000	966000	2555000	1949000	1346000	1791000	2352000	2581000	998000	

Then, I select all the dates fields and go to Unpivot Columns under Transform menu.



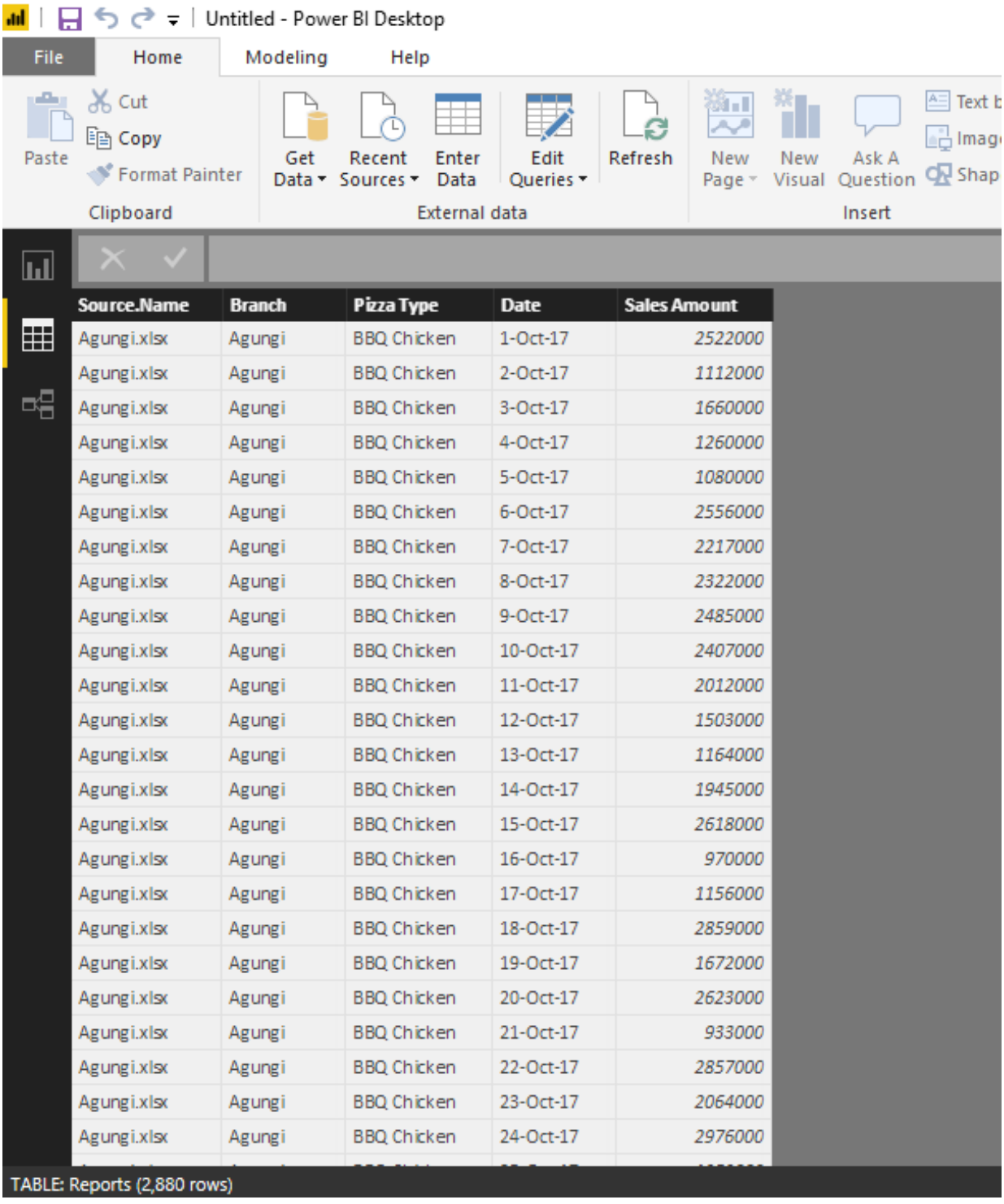
	Source.Name	Branch	Pizza Type	1-Oct-17	2-Oct-17	3-Oct-17	4-Oct-17	5-Oct-1
1	Agungi.xlsx	Agungi	BBQ Chicken	2522000	1112000	1660000	1260000	
2	Agungi.xlsx	Agungi	BBQ Philly Steak	1362000	1798000	1134000	2642000	
3	Agungi.xlsx	Agungi	Beef Suya	2827000	1543000	2102000	2524000	
4	Agungi.xlsx	Agungi	Chicken Bali	2112000	1439000	1960000	2200000	
5	Agungi.xlsx	Agungi	Chicken Feast	2538000	2454000	1260000	2648000	
6	Agungi.xlsx	Agungi	Chicken Legend	2770000	1617000	2579000	1010000	
7	Agungi.xlsx	Agungi	Chicken Suya	2304000	1894000	1024000	1416000	
8	Agungi.xlsx	Agungi	Extravaganza	2390000	1328000	1055000	2918000	
9	Agungi.xlsx	Agungi	Hot Pepperoni Feast	2838000	1265000	2423000	1545000	
10	Agungi.xlsx	Agungi	Hot Veggie	2867000	1365000	2125000	1718000	
11	Agungi.xlsx	Agungi	Italiano	2609000	2171000	1440000	1211000	
12	Agungi.xlsx	Agungi	Margarita	2776000	1821000	1640000	2872000	
13	Agungi.xlsx	Agungi	Meatzaa	1507000	1665000	1322000	2860000	
14	Agungi.xlsx	Agungi	Pepperoni Feast	2909000	2785000	1461000	1807000	
15	Agungi.xlsx	Agungi	Pepperoni Suya	1320000	1039000	939000	1886000	
16	Agungi.xlsx	Agungi	Veggie Supreme	1272000	1675000	1515000	1413000	
17	Gbagada.xlsx	Gbagada	BBQ Chicken	1277000	2057000	1875000	1181000	
18	Gbagada.xlsx	Gbagada	BBQ Philly Steak	1979000	2078000	2769000	966000	
19	Gbagada.xlsx	Gbagada	Beef Suya	2767000	2706000	1773000	2240000	
20	Gbagada.xlsx	Gbagada	Chicken Bali	1708000	1944000	2767000	1679000	
21	Gbagada.xlsx	Gbagada	Chicken Feast	2021000	1228000	2433000	2806000	
22	Gbagada.xlsx	Gbagada	Chicken Legend	1216000	2078000	2529000	2920000	
23	Gbagada.xlsx	Gbagada	Chicken Suya	1558000	2491000	2798000	1040000	
24	Gbagada.xlsx	Gbagada	Extravaganza	1437000	2915000	2910000	1918000	
25								

And that is all. Except that I change the default names from Attribute to Date and Values to Sales Amount.



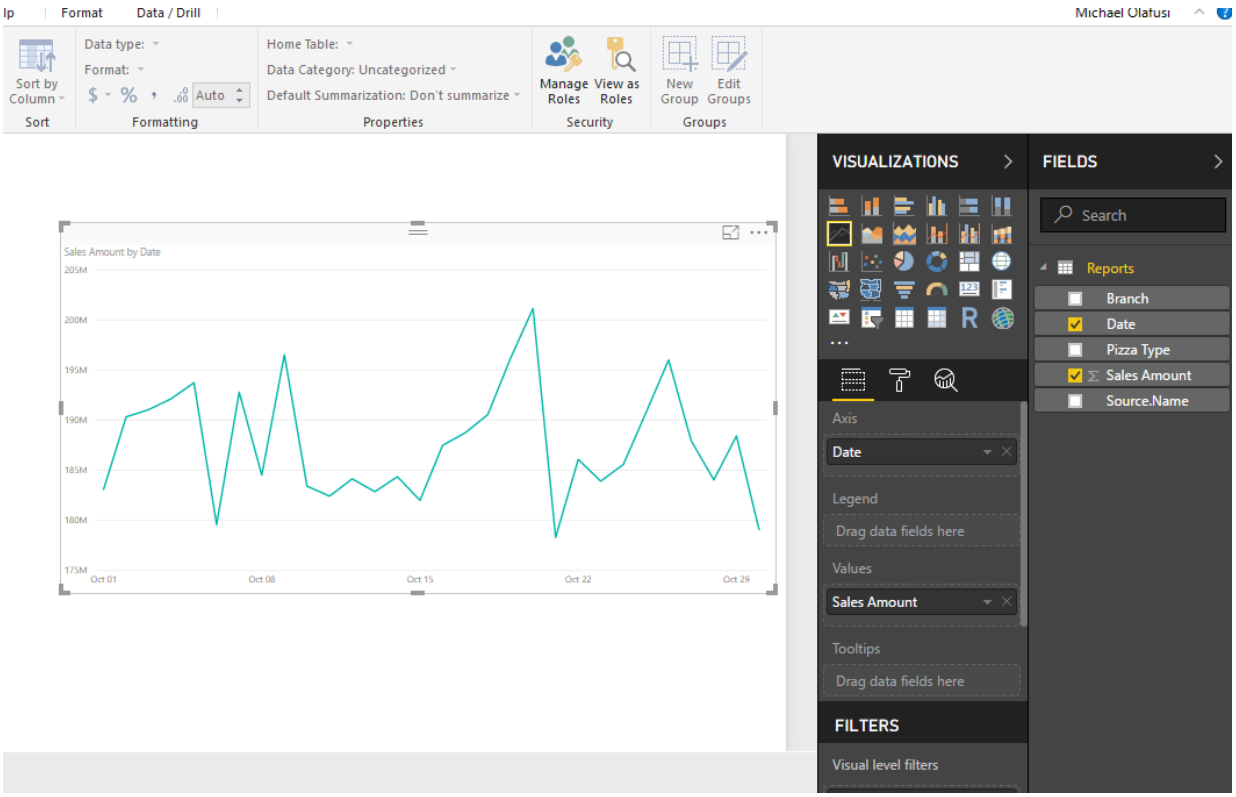
	Source.Name	Branch	Pizza Type	Attribute	Value
1	Agungi.xlsx	Agungi	BBQ Chicken	1-Oct-17	2522000
2	Agungi.xlsx	Agungi	BBQ Chicken	2-Oct-17	1112000
3	Agungi.xlsx	Agungi	BBQ Chicken	3-Oct-17	1660000
4	Agungi.xlsx	Agungi	BBQ Chicken	4-Oct-17	1260000
5	Agungi.xlsx	Agungi	BBQ Chicken	5-Oct-17	1080000
6	Agungi.xlsx	Agungi	BBQ Chicken	6-Oct-17	2556000
7	Agungi.xlsx	Agungi	BBQ Chicken	7-Oct-17	2217000
8	Agungi.xlsx	Agungi	BBQ Chicken	8-Oct-17	2322000
9	Agungi.xlsx	Agungi	BBQ Chicken	9-Oct-17	2485000
10	Agungi.xlsx	Agungi	BBQ Chicken	10-Oct-17	2407000
11	Agungi.xlsx	Agungi	BBQ Chicken	11-Oct-17	2012000
12	Agungi.xlsx	Agungi	BBQ Chicken	12-Oct-17	1503000
13	Agungi.xlsx	Agungi	BBQ Chicken	13-Oct-17	1164000
14	Agungi.xlsx	Agungi	BBQ Chicken	14-Oct-17	1945000
15	Agungi.xlsx	Agungi	BBQ Chicken	15-Oct-17	2618000
16	Agungi.xlsx	Agungi	BBQ Chicken	16-Oct-17	970000
17	Agungi.xlsx	Agungi	BBQ Chicken	17-Oct-17	1156000
18	Agungi.xlsx	Agungi	BBQ Chicken	18-Oct-17	2859000
19	Agungi.xlsx	Agungi	BBQ Chicken	19-Oct-17	1672000
20	Agungi.xlsx	Agungi	BBQ Chicken	20-Oct-17	2623000
21	Agungi.xlsx	Agungi	BBQ Chicken	21-Oct-17	933000
22	Agungi.xlsx	Agungi	BBQ Chicken	22-Oct-17	2857000
23	Agungi.xlsx	Agungi	BBQ Chicken	23-Oct-17	2064000
24	Agungi.xlsx	Agungi	BBQ Chicken	24-Oct-17	2976000
25	Agungi.xlsx	Agungi	BBQ Chicken	25-Oct-17	1252000

Close & Apply.



Source.Name	Branch	Pizza Type	Date	Sales Amount
Agungi.xlsx	Agungi	BBQ Chicken	1-Oct-17	2522000
Agungi.xlsx	Agungi	BBQ Chicken	2-Oct-17	1112000
Agungi.xlsx	Agungi	BBQ Chicken	3-Oct-17	1660000
Agungi.xlsx	Agungi	BBQ Chicken	4-Oct-17	1260000
Agungi.xlsx	Agungi	BBQ Chicken	5-Oct-17	1080000
Agungi.xlsx	Agungi	BBQ Chicken	6-Oct-17	2556000
Agungi.xlsx	Agungi	BBQ Chicken	7-Oct-17	2217000
Agungi.xlsx	Agungi	BBQ Chicken	8-Oct-17	2322000
Agungi.xlsx	Agungi	BBQ Chicken	9-Oct-17	2485000
Agungi.xlsx	Agungi	BBQ Chicken	10-Oct-17	2407000
Agungi.xlsx	Agungi	BBQ Chicken	11-Oct-17	2012000
Agungi.xlsx	Agungi	BBQ Chicken	12-Oct-17	1503000
Agungi.xlsx	Agungi	BBQ Chicken	13-Oct-17	1164000
Agungi.xlsx	Agungi	BBQ Chicken	14-Oct-17	1945000
Agungi.xlsx	Agungi	BBQ Chicken	15-Oct-17	2618000
Agungi.xlsx	Agungi	BBQ Chicken	16-Oct-17	970000
Agungi.xlsx	Agungi	BBQ Chicken	17-Oct-17	1156000
Agungi.xlsx	Agungi	BBQ Chicken	18-Oct-17	2859000
Agungi.xlsx	Agungi	BBQ Chicken	19-Oct-17	1672000
Agungi.xlsx	Agungi	BBQ Chicken	20-Oct-17	2623000
Agungi.xlsx	Agungi	BBQ Chicken	21-Oct-17	933000
Agungi.xlsx	Agungi	BBQ Chicken	22-Oct-17	2857000
Agungi.xlsx	Agungi	BBQ Chicken	23-Oct-17	2064000
Agungi.xlsx	Agungi	BBQ Chicken	24-Oct-17	2976000

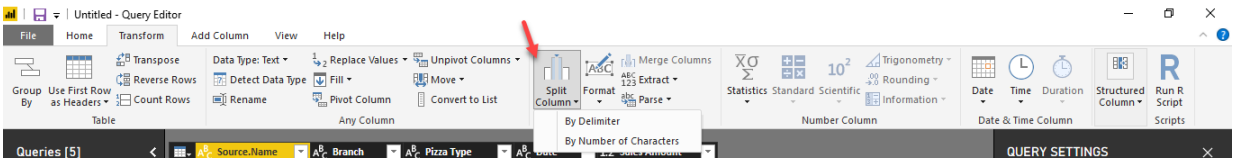
And now we can successfully build the sales chart we want.



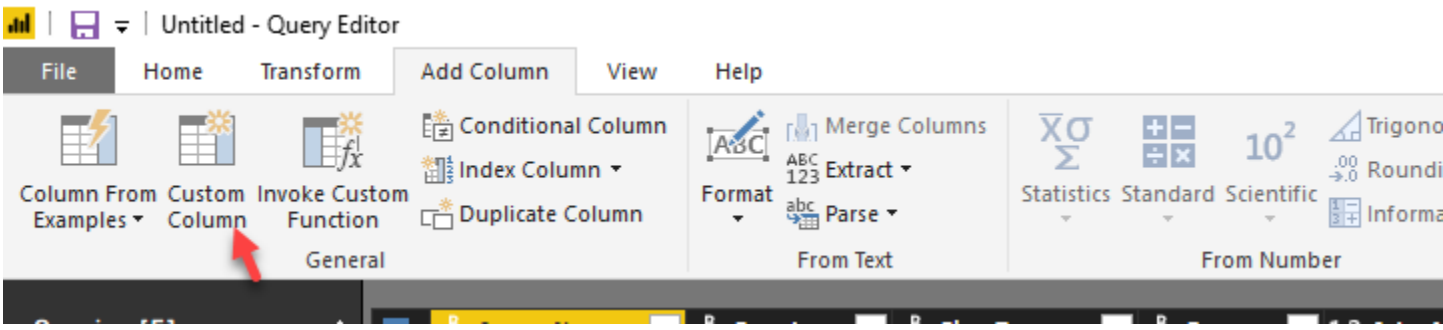
Other Common Data Transformation tools

Luckily, the tools in the Query Editor all have self-explanatory names. Take your time to go through each menu and the tools under each.

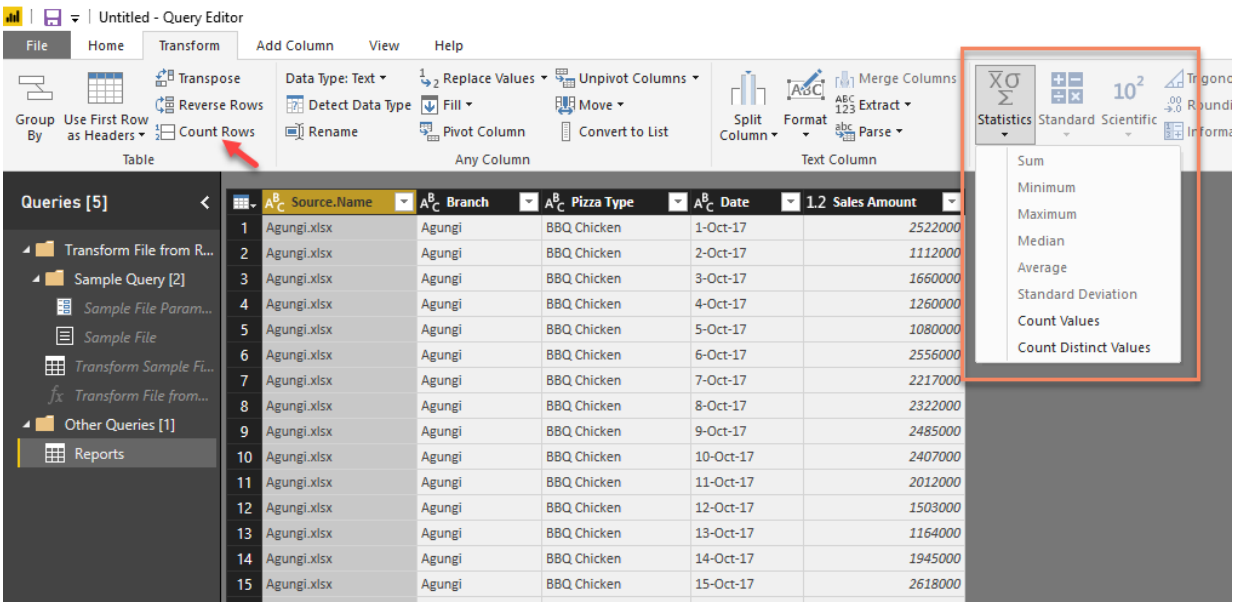
Two other tools I'll like to specially draw your attention to because I use them often are: the Split Column



and the Add Custom Column



You will also find Count Rows and Statistics useful when dealing with a large data table and want to have an idea of how many rows are in there, and maybe the distinct values too.



Data Analysis Expressions (DAX)

In the Power BI data model, the formulas you use are called DAX. They are in some ways similar to Excel formulas, so if you are already proficient at using Excel formulas you will find that skill useful in Power BI. There are, however, some significant differences between DAX and the formulas used in Excel even when they've got same names and purpose. One main difference is that DAX operates on entire columns or an entire table rather than individual cell entries like you can in Excel. Another difference is that DAX is structured to work within a database-like ecosystem. It recognises table relationships, recognises more data types than Excel and can generate a single (scalar) value or a column or a table.

Thanks to the compilation by Paul Turkey (https://sqlserverbi.blog/2015/11/25/complete-dax-function-reference/), below is a listing of all the DAX formulas (Microsoft continually create new ones, so this list may not be exhaustive). You can always access the Microsoft documentation at https://msdn.microsoft.com/en-us/library/ee634396.aspx

Category	Function	Description
DATETIME	CLOSINGBALANCEMONTH	Evaluates the specified expression for the date corresponding to the end of the current month after applying specified filters.
DATETIME	CLOSINGBALANCEQUARTER	Evaluates the specified expression for the date corresponding to the end of the current quarter after applying specified filters.
DATETIME	CLOSINGBALANCEYEAR	Evaluates the specified expression for the date corresponding to the end of the current year after applying specified filters.
DATETIME	DATE	Returns the specified date in datetime format.
DATETIME	DATEADD	Moves the given set of dates by a specified interval.
DATETIME	DATEDIFF	Returns the number of units (unit specified in Interval) between the input two dates.
DATETIME	DATESBETWEEN	Returns the dates between two given dates.
DATETIME	DATESINPERIOD	Returns the dates from the given period.
DATETIME	DATESMTD	Returns a set of dates in the month up to current date.
DATETIME	DATESQTD	Returns a set of dates in the quarter up to current date.

DATETIME	DATESYTD	Returns a set of dates in the year up to current date.
DATETIME	DATEVALUE	Converts a date in the form of text to a date in datetime format.
DATETIME	DAY	Returns a number from 1 to 31 representing the day of the month.
DATETIME	EDATE	Returns the date that is the indicated number of months before or after the start date.
DATETIME	ENDOFMONTH	Returns the end of month.
DATETIME	ENDOFQUARTER	Returns the end of quarter.
DATETIME	ENDOFYEAR	Returns the end of year.
DATETIME	EOMONTH	Returns the date in datetime format of the last day of the month before or after a specified number of months.
DATETIME	FIRSTDATE	Returns first non blank date.
DATETIME	FIRSTNONBLANK	Returns the first value in the column for which the expression has a non blank value.
DATETIME	HOUR	Returns the hour as a number from 0 (12:00 A.M.) to 23 (11:00 P.M.).
DATETIME	LASTDATE	Returns last non blank date.
DATETIME	LASTNONBLANK	Returns the last value in the column for which the expression has a non blank value.
DATETIME	MINUTE	Returns a number from 0 to 59 representing the minute.
DATETIME	MONTH	Returns a number from 1 (January) to 12 (December) representing the month.
DATETIME	NEXTDAY	Returns a next day.
DATETIME	NEXTMONTH	Returns a next month.
DATETIME	NEXTQUARTER	Returns a next quarter.
DATETIME	NEXTYEAR	Returns a next year.
DATETIME	NOW	Returns the current date and time in datetime format.
DATETIME	OPENINGBALANCEMONTH	Evaluates the specified expression for the date corresponding to the end of the previous month after applying specified filters.
DATETIME	OPENINGBALANCEQUARTER	Evaluates the specified expression for the date corresponding to the end of the previous quarter after applying specified filters.

DATETIME	OPENINGBALANCEYEAR	Evaluates the specified expression for the date corresponding to the end of the previous year after applying specified filters.
DATETIME	PARALLELPERIOD	Returns a parallel period of dates by the given set of dates and a specified interval.
DATETIME	PREVIOUSDAY	Returns a previous day.
DATETIME	PREVIOUSMONTH	Returns a previous month.
DATETIME	PREVIOUSQUARTER	Returns a previous quarter.
DATETIME	PREVIOUSYEAR	Returns a previous year.
DATETIME	SAMEPERIODLASTYEAR	Returns a set of dates in the current selection from the previous year.
DATETIME	SECOND	Returns a number from 0 to 59 representing the second.
DATETIME	STARTOFMONTH	Returns the start of month.
DATETIME	STARTOFQUARTER	Returns the start of quarter.
DATETIME	STARTOFYEAR	Returns the start of year.
DATETIME	TIME	Converts hours, minutes, and seconds given as numbers to a time in datetime format.
DATETIME	TIMEVALUE	Converts a time in text format to a time in datetime format.
DATETIME	TODAY	Returns the current date in datetime format.
DATETIME	TOTALMTD	Evaluates the specified expression over the interval which begins on the first of the month and ends with the last date in the specified date column after applying specified filters.
DATETIME	TOTALQTD	Evaluates the specified expression over the interval which begins on the first day of the quarter and ends with the last date in the specified date column after applying specified filters.
DATETIME	TOTALYTD	Evaluates the specified expression over the interval which begins on the first day of the year and ends with the last date in the specified date column after applying specified filters.
DATETIME	WEEKDAY	Returns a number from 1 to 7 identifying the day of the week of a date.

DATETIME	WEEKNUM	Returns the week number in the year.
DATETIME	YEAR	Returns the year of a date as a four digit integer.
DATETIME	YEARFRAC	Returns the year fraction representing the number of whole days between start_date and end_date.
FILTER	ADDCOLUMNS	Returns a table with new columns specified by the DAX expressions.
FILTER	ADDMISSINGITEMS	Add the rows with empty measure values back.
FILTER	ALL	Returns all the rows in a table, or all the values in a column, ignoring any filters that might have been applied.
FILTER	ALLEXCEPT	Returns all the rows in a table except for those rows that are affected by the specified column filters.
FILTER	ALLNOBLANKROW	Returns all the rows except blank row in a table, or all the values in a column, ignoring any filters that might have been applied.
FILTER	ALLSELECTED	Returns all the rows in a table, or all the values in a column, ignoring any filters that might have been applied inside the query, but keeping filters that come from outside.
FILTER	CALCULATE	Evaluates an expression in a context modified by filters.
FILTER	CALCULATETABLE	Evaluates a table expression in a context modified by filters.
FILTER	CALENDAR	Returns a table with one column of all dates between StartDate and EndDate.
FILTER	CALENDARAUTO	Returns a table with one column of dates calculated from the model automatically.
FILTER	CROSSFILTER	Specifies cross filtering direction to be used in the evaluation of a DAX expression. The relationship is defined by naming, as arguments, the two columns that serve as endpoints.
FILTER	CROSSJOIN	Returns a table that is a crossjoin of the specified tables.

FILTER	CURRENTGROUP	Access to the (sub)table representing current group in GroupBy function. Can be used only inside GroupBy function.
FILTER	DISTINCT	Returns a one column table that contains the distinct (unique) values in a column, for a column argument. Or multiple columns with distinct (unique) combination of values, for a table expression argument.
FILTER	EARLIER	Returns the value in the column prior to the specified number of table scans (default is 1).
FILTER	EARLIEST	Returns the value in the column for the very first point at which there was a row context.
FILTER	EXCEPT	Returns the rows of left-side table which do not appear in right-side table.
FILTER	FILTER	Returns a table that has been filtered.
FILTER	FILTERS	Returns a table of the filter values applied directly to the specified column.
FILTER	GENERATE	The second table expression will be evaluated for each row in the first table. Returns the crossjoin of the first table with these results.
FILTER	GENERATEALL	The second table expression will be evaluated for each row in the first table. Returns the crossjoin of the first table with these results, including rows for thich the second table expression is empty.
FILTER	GROUPBY	Creates a summary the input table grouped by the specified columns.
FILTER	IGNORE	Tags a measure expression specified in the call to SUMMARIZECOLUMNS function to be ignored when determining the non-blank rows.
FILTER	INTERSECT	Returns the rows of left-side table which appear in right-side table.
FILTER	ISONORAFTER	The IsOnOrAfter function is a boolean function that emulates

		the behavior of Start At clause and returns true for a row that meets all the conditions mentioned as parameters in this function.
FILTER	KEEPFILTERS	Changes the CALCULATE and CALCULATETABLE function filtering semantics.
FILTER	LOOKUPVALUE	Retrieves a value from a table.
FILTER	NATURALINNERJOIN	Joins the Left table with right table using the Inner Join semantics.
FILTER	NATURALLEFTOUTERJOIN	Joins the Left table with right table using the Left Outer Join semantics.
FILTER	RELATED	Returns a related value from another table.
FILTER	RELATEDTABLE	Returns the related tables filtered so that it only includes the related rows.
FILTER	ROLLUP	Identifies a subset of columns specified in the call to SUMMARIZE function that should be used to calculate subtotals.
FILTER	ROLLUPADDISSUBTOTAL	Identifies a subset of columns specified in the call to SUMMARIZECOLUMNS function that should be used to calculate groups of subtotals.
FILTER	ROLLUPGROUP	Identifies a subset of columns specified in the call to SUMMARIZE function that should be used to calculate groups of subtotals.
FILTER	ROLLUPISSUBTOTAL	Pairs up the rollup groups with the column added by ROLLUPADDISSUBTOTAL.
FILTER	ROW	Returns a single row table with new columns specified by the DAX expressions.
FILTER	SAMPLE	Returns a sample subset from a given table expression.
FILTER	SELECTCOLUMNS	Returns a table with selected columns from the table and new columns specified by the DAX expressions.
FILTER	SUBSTITUTEWITHINDEX	Returns a table which represents the semijoin of two tables supplied and for which the

		common set of columns are replaced by a 0-based index column. The index is based on the rows of the second table sorted by specified order expressions.
FILTER	SUMMARIZE	Creates a summary the input table grouped by the specified columns.
FILTER	SUMMARIZECOLUMNS	Create a summary table for the requested totals over set of groups.
FILTER	TOPN	Returns a given number of top rows according to a specified expression.
FILTER	UNION	Returns the union of the two tables whose columns match.
FILTER	USERELATIONSHIP	Specifies an existing relationship to be used in the evaluation of a DAX expression. The relationship is defined by naming, as arguments, the two columns that serve as endpoints.
FILTER	VALUES	Returns a one column table or a table that contains the distinct (unique) values in a column.
INFO	CONTAINS	Returns TRUE if there exists at least one row where all columns have specified values.
INFO	CUSTOMDATA	Returns the value of the CustomData connection string property if defined; otherwise, BLANK().
INFO	HASONEFILTER	Returns true the specified table or column have one and only one filter.
INFO	HASONEVALUE	Returns true when there's only one value in the specified column.
INFO	ISBLANK	Checks whether a value is blank, and returns TRUE or FALSE.
INFO	ISCROSSFILTERED	Returns true when the specified table or column is crossfiltered.
INFO	ISEMPTY	Returns true if the specified table or table-expression is Empty.
INFO	ISERROR	Checks whether a value is an error, and returns TRUE or FALSE.
INFO	ISEVEN	Returns TRUE if number is even, or FALSE if number is odd.

INFO	ISFILTERED	Returns true when there are direct filters on the specified column.
INFO	ISLOGICAL	Checks whether a value is a logical value (TRUE or FALSE), and returns TRUE or FALSE.
INFO	ISNONTEXT	Checks whether a value is not text (blank cells are not text), and returns TRUE or FALSE.
INFO	ISNUMBER	Checks whether a value is a number, and returns TRUE or FALSE.
INFO	ISODD	Returns TRUE if number is odd, or FALSE if number is even.
INFO	ISSUBTOTAL	Returns TRUE if the current row contains a subtotal for a specified column and FALSE otherwise.
INFO	ISTEXT	Checks whether a value is text, and returns TRUE or FALSE.
INFO	USERNAME	Returns the domain name and user name of the current connection with the format of domain-name\user-name.
LOGICAL	AND	Checks whether all arguments are TRUE, and returns TRUE if all arguments are TRUE.
LOGICAL	IF	Checks whether a condition is met, and returns one value if TRUE, and another value if FALSE.
LOGICAL	IFERROR	Returns value_if_error if the first expression is an error and the value of the expression itself otherwise.
LOGICAL	NOT	Changes FALSE to TRUE, or TRUE to FALSE.
LOGICAL	OR	Returns TRUE if any of the arguments are TRUE, and returns FALSE if all arguments are FALSE.
LOGICAL	SWITCH	Returns different results depending on the value of an expression.
LOGICAL	FALSE	Returns the logical value FALSE.
LOGICAL	TRUE	Returns the logical value TRUE.
MATHTRIG	ABS	Returns the absolute value of a number.
MATHTRIG	ACOS	Returns the arccosine, or inverse cosine, of a number. The arccosine is the angle whose

		cosine is number. The returned angle is given in radians in the range 0 (zero) to pi.
MATHTRIG	ACOSH	Returns the inverse hyperbolic cosine of a number. The number must be greater than or equal to 1. The inverse hyperbolic cosine is the value whose hyperbolic cosine is number, so ACOSH(COSH(number)) equals number.
MATHTRIG	ACOT	Returns the principal value of the arccotangent, or inverse cotangent, of a number.
MATHTRIG	ACOTH	Returns the inverse hyperbolic cotangent of a number.
MATHTRIG	ASIN	Returns the arcsine, or inverse sine, of a number. The arcsine is the angle whose sine is number. The returned angle is given in radians in the range -pi/2 to pi/2.
MATHTRIG	ASINH	Returns the inverse hyperbolic sine of a number. The inverse hyperbolic sine is the value whose hyperbolic sine is number, so ASINH(SINH(number)) equals number.
MATHTRIG	ATAN	Returns the arctangent, or inverse tangent, of a number. The arctangent is the angle whose tangent is number. The returned angle is given in radians in the range -pi/2 to pi/2.
MATHTRIG	ATANH	Returns the inverse hyperbolic tangent of a number. Number must be between -1 and 1 (excluding -1 and 1). The inverse hyperbolic tangent is the value whose hyperbolic tangent is number, so ATANH(TANH(number)) equals number.
MATHTRIG	BETA.DIST	Returns the beta distribution. The beta distribution is commonly used to study variation in the percentage of something across samples, such as the fraction of the day people spend watching television.

MATHTRIG	BETA.INV	Returns the inverse of the beta cumulative probability density function (BETA.DIST). If probability = BETA.DIST(x,...TRUE), then BETA.INV(probability,...) = x. The beta distribution can be used in project planning to model probable completion times given an expected completion time and variability.
MATHTRIG	CEILING	Rounds a number up, to the nearest integer or to the nearest unit of significance.
MATHTRIG	CHISQ.DIST	Returns the chi-squared distribution. The chi-squared distribution is commonly used to study variation in the percentage of something across samples, such as the fraction of the day people spend watching television.
MATHTRIG	CHISQ.DIST.RT	Returns the right-tailed probability of the chi-squared distribution. The chi-squared distribution is associated with a chi-squared test. Use the chi-squared test to compare observed and expected values. For example, a genetic experiment might hypothesize that the next generation of plants will exhibit a certain set of colors. By comparing the observed results with the expected ones, you can decide whether your original hypothesis is valid.
MATHTRIG	CHISQ.INV	Returns the inverse of the left-tailed probability of the chi-squared distribution. The chi-squared distribution is commonly used to study variation in the percentage of something across samples, such as the fraction of the day people spend watching television.
MATHTRIG	CHISQ.INV.RT	Returns the inverse of the right-tailed probability of the chi-squared distribution. If probability = CHISQ.DIST.RT(x,...), then

		CHISQ.INV.RT(probability,...) = x. Use this function to compare observed results with expected ones in order to decide whether your original hypothesis is valid.
MATHTRIG	COMBIN	Returns the number of combinations for a given number of items. Use COMBIN to determine the total possible number of groups for a given number of items.
MATHTRIG	COMBINA	Returns the number of combinations (with repetitions) for a given number of items.
MATHTRIG	CONFIDENCE.NORM	Returns the confidence interval for a population mean, using a normal distribution.
MATHTRIG	CONFIDENCE.T	Returns the confidence interval for a population mean, using a Student's t distribution.
MATHTRIG	COS	Returns the cosine of the given angle.
MATHTRIG	COSH	Returns the hyperbolic cosine of a number.
MATHTRIG	COT	Return the cotangent of an angle specified in radians.
MATHTRIG	COTH	Return the hyperbolic cotangent of a hyperbolic angle.
MATHTRIG	CURRENCY	Returns the value as a currency data type.
MATHTRIG	DEGREES	Converts radians into degrees.
MATHTRIG	EVEN	Returns number rounded up to the nearest even integer. You can use this function for processing items that come in twos. For example, a packing crate accepts rows of one or two items. The crate is full when the number of items, rounded up to the nearest two, matches the crate's capacity.
MATHTRIG	EXP	Returns e raised to the power of a given number.
MATHTRIG	EXPON.DIST	Returns the exponential distribution. Use EXPON.DIST to model the time between events, such as how long an automated bank teller takes to deliver cash.

		For example, you can use EXPON.DIST to determine the probability that the process takes at most 1 minute.
MATHTRIG	FACT	Returns the factorial of a number, equal to 1*2*3*...* Number.
MATHTRIG	FLOOR	Rounds a number down, toward zero, to the nearest multiple of significance.
MATHTRIG	GCD	Returns the greatest common divisor of two integers. The greatest common divisor is the largest integer that divides both number1 and number2 without a remainder.
MATHTRIG	INT	Rounds a number down to the nearest integer.
MATHTRIG	ISO.CEILING	Rounds a number up, to the nearest integer or to the nearest multiple of significance.
MATHTRIG	LCM	Returns the least common multiple of integers. The least common multiple is the smallest positive integer that is a multiple of both integer arguments number1, number2. Use LCM to add fractions with different denominators.
MATHTRIG	LN	Returns the natural logarithm of a number.
MATHTRIG	LOG	Returns the logarithm of a number to the base you specify.
MATHTRIG	LOG10	Returns the base-10 logarithm of a number.
MATHTRIG	MOD	Returns the remainder after a number is divided by a divisor.
MATHTRIG	MROUND	Returns a number rounded to the desired multiple.
MATHTRIG	ODD	Returns number rounded up to the nearest odd integer.
MATHTRIG	PERMUT	Returns the number of permutations for a given number of objects that can be selected from number objects. A permutation is any set or subset of objects or events where internal order is significant. Permutations are different from

		combinations, for which the internal order is not significant. Use this function for lottery-style probability calculations.
MATHTRIG	PI	Returns the value of Pi, 3.14159265358979, accurate to 15 digits.
MATHTRIG	POISSON.DIST	Returns the Poisson distribution. A common application of the Poisson distribution is predicting the number of events over a specific time, such as the number of cars arriving at a toll plaza in 1 minute.
MATHTRIG	POWER	Returns the result of a number raised to a power.
MATHTRIG	QUOTIENT	Returns the integer portion of a division.
MATHTRIG	RADIANS	Converts degrees to radians.
MATHTRIG	RAND	Returns a random number greater than or equal to 0 and less than 1, evenly distributed. Random numbers change on recalculation.
MATHTRIG	RANDBETWEEN	Returns a random number between the numbers you specify.
MATHTRIG	ROUND	Rounds a number to a specified number of digits.
MATHTRIG	ROUNDDOWN	Rounds a number down, toward zero.
MATHTRIG	ROUNDUP	Rounds a number up, away from zero.
MATHTRIG	SIGN	Returns the sign of a number: 1 if the number is positive, zero if the number is zero, or -1 if the number is negative.
MATHTRIG	SIN	Returns the sine of the given angle.
MATHTRIG	SINH	Returns the hyperbolic sine of a number.
MATHTRIG	SQRT	Returns the square root of a number.
MATHTRIG	SQRTPI	Returns the square root of (number * pi).
MATHTRIG	SUM	Adds all the numbers in a column.
MATHTRIG	SUMX	Returns the sum of an expression evaluated for each row in a table.
MATHTRIG	TAN	Returns the tangent of the given angle.

MATHTRIG	TANH	Returns the hyperbolic tangent of a number.
MATHTRIG	TRUNC	Truncates a number to an integer by removing the decimal, or fractional, part of the number.
PARENTCHILD	PATH	Returns a string which contains a delimited list of IDs, starting with the top/root of a hierarchy and ending with the specified ID.
PARENTCHILD	PATHCONTAINS	Returns TRUE if the specified Item exists within the specified Path.
PARENTCHILD	PATHITEM	Returns the nth item in the delimited list produced by the Path function.
PARENTCHILD	PATHITEMREVERSE	Returns the nth item in the delimited list produced by the Path function, counting backwards from the last item in the path.
PARENTCHILD	PATHLENGTH	Returns returns the number of items in a particular path string. This function returns 1 for the path generated for an ID at the top/root of a hierarchy.
STATISTICAL	AVERAGE	Returns the average (arithmetic mean) of all the numbers in a column.
STATISTICAL	AVERAGEA	Returns the average (arithmetic mean) of all the values in a column.
STATISTICAL	AVERAGEX	Returns the average (arithmetic mean) of all the numbers in a column.
STATISTICAL	COUNT	Counts the numbers in a column.
STATISTICAL	COUNTA	Counts the number of values in a column.
STATISTICAL	COUNTAX	Counts the number of values which result from evaluating an expression for each row of a table.
STATISTICAL	COUNTBLANK	Counts the number of blanks in a column.
STATISTICAL	COUNTROWS	Counts the number of rows in a table.
STATISTICAL	COUNTX	Counts the number of values which result from evaluating an expression for each row of a table.

STATISTICAL	DISTINCTCOUNT	Counts the number of distinct values in a column.
STATISTICAL	DIVIDE	Safe Divide function with ability to handle divide by zero case.
STATISTICAL	GEOMEAN	Returns geometric mean of given column reference.
STATISTICAL	GEOMEANX	Returns geometric mean of an expression values in a table.
STATISTICAL	MAX	Returns the largest numeric value in a column, or the larger value between two scalar expressions. Ignores logical values and text.
STATISTICAL	MAXA	Returns the largest value in a column. Does not ignore logical values and text.
STATISTICAL	MAXX	Returns the largest numeric value that results from evaluating an expression for each row of a table.
STATISTICAL	MEDIAN	Returns the 50th percentile of values in a column.
STATISTICAL	MEDIANX	Returns the 50th percentile of an expression values in a table.
STATISTICAL	MIN	Returns the smallest numeric value in a column, or the smaller value between two scalar expressions. Ignores logical values and text.
STATISTICAL	MINA	Returns the smallest value in a column. Does not ignore logical values and text.
STATISTICAL	MINX	Returns the smallest numeric value that results from evaluating an expression for each row of a table.
STATISTICAL	PERCENTILE.EXC	Returns the k-th (exclusive) percentile of values in a column.
STATISTICAL	PERCENTILE.INC	Returns the k-th (inclusive) percentile of values in a column.
STATISTICAL	PERCENTILEX.EXC	Returns the k-th (exclusive) percentile of an expression values in a table.
STATISTICAL	PERCENTILEX.INC	Returns the k-th (inclusive) percentile of an expression values in a table.
STATISTICAL	PRODUCT	Returns the product of given column reference.

STATISTICAL	PRODUCTX	Returns the product of an expression values in a table.
STATISTICAL	RANK.EQ	Returns the rank of a number in a column of numbers. If more than one value has the same rank, the top rank of that set of values is returned.
STATISTICAL	RANKX	Returns the rank of an expression evaluated in the current context in the list of values for the expression evaluated for each row in the specified table.
STATISTICAL	STDEV.P	Calculates standard deviation based on the entire population given as arguments. Ignores logical values and text.
STATISTICAL	STDEV.S	Estimates standard deviation based on a sample. Ignores logical values and text in the sample.
STATISTICAL	STDEVX.P	Estimates standard deviation based on the entire population that results from evaluating an expression for each row of a table.
STATISTICAL	STDEVX.S	Estimates standard deviation based on a sample that results from evaluating an expression for each row of a table.
STATISTICAL	VAR.P	Calculates variance based on the entire population. Ignores logical values and text in the population.
STATISTICAL	VAR.S	Estimates variance based on a sample. Ignores logical values and text in the sample.
STATISTICAL	VARX.P	Estimates variance based on the entire population that results from evaluating an expression for each row of a table.
STATISTICAL	VARX.S	Estimates variance based on a sample that results from evaluating an expression for each row of a table.
STATISTICAL	XIRR	Returns the internal rate of return for a schedule of cash flows that is not necessarily periodic.
STATISTICAL	XNPV	Returns the net present value for a schedule of cash flows.
TEXT	BLANK	Returns a blank.

TEXT	CONCATENATE	Joins two text strings into one text string.
TEXT	CONCATENATEX	Evaluates expression for each row on the table, then return the concatenation of those values in a single string result, seperated by the specified delimiter.
TEXT	EXACT	Checks whether two text strings are exactly the same, and returns TRUE or FALSE. EXACT is case-sensitive.
TEXT	FIND	Returns the starting position of one text string within another text string. FIND is case-sensitive.
TEXT	FIXED	Rounds a number to the specified number of decimals and returns the result as text with optional commas.
TEXT	FORMAT	Converts a value to text in the specified number format.
TEXT	KEYWORDMATCH	Returns TRUE if there is a match between the MatchExpression and Text.
TEXT	LEFT	Returns the specified number of characters from the start of a text string.
TEXT	LEN	Returns the number of characters in a text string.
TEXT	LOWER	Converts all letters in a text string to lowercase.
TEXT	MID	Returns a string of characters from the middle of a text string, given a starting position and length.
TEXT	REPLACE	Replaces part of a text string with a different text string.
TEXT	REPT	Repeats text a given number of times. Use REPT to fill a cell with a number of instances of a text string.
TEXT	RIGHT	Returns the specified number of characters from the end of a text string.
TEXT	SEARCH	Returns the starting position of one text string within another text string. SEARCH is not case-sensitive.

TEXT	SUBSTITUTE	Replaces existing text with new text in a text string.
TEXT	TRIM	Removes all spaces from a text string except for single spaces between words.
TEXT	UNICODE	Returns the number (code point) corresponding to the first character of the text.
TEXT	UPPER	Converts a text string to all uppercase letters.
TEXT	VALUE	Converts a text string that represents a number to a number.

It is quite a long list but if I have to single out the ones to spend more time on at the beginning, the list would be:

1. CALCULATE. This is absolutely the formula you will use the most as you build complex reports in Power BI. I rate it number 1 in the priority list.
2. SUM
3. FILTER
4. ALL
5. ALLEXCEPT
6. ALLSELECTED
7. RELATED
8. FORMAT
9. CALENDAR
10. IF
11. AND, OR, &&, ||
12. SEARCH
13. CONCATENATE, &
14. DIVIDE
15. SUMX
16. COUNTROWS
17. VALUES
18. DISTINCT
19. CROSSJOIN
20. SUMMARIZE
21. DATE

Here are some explanations around the less easy to figure out ones.

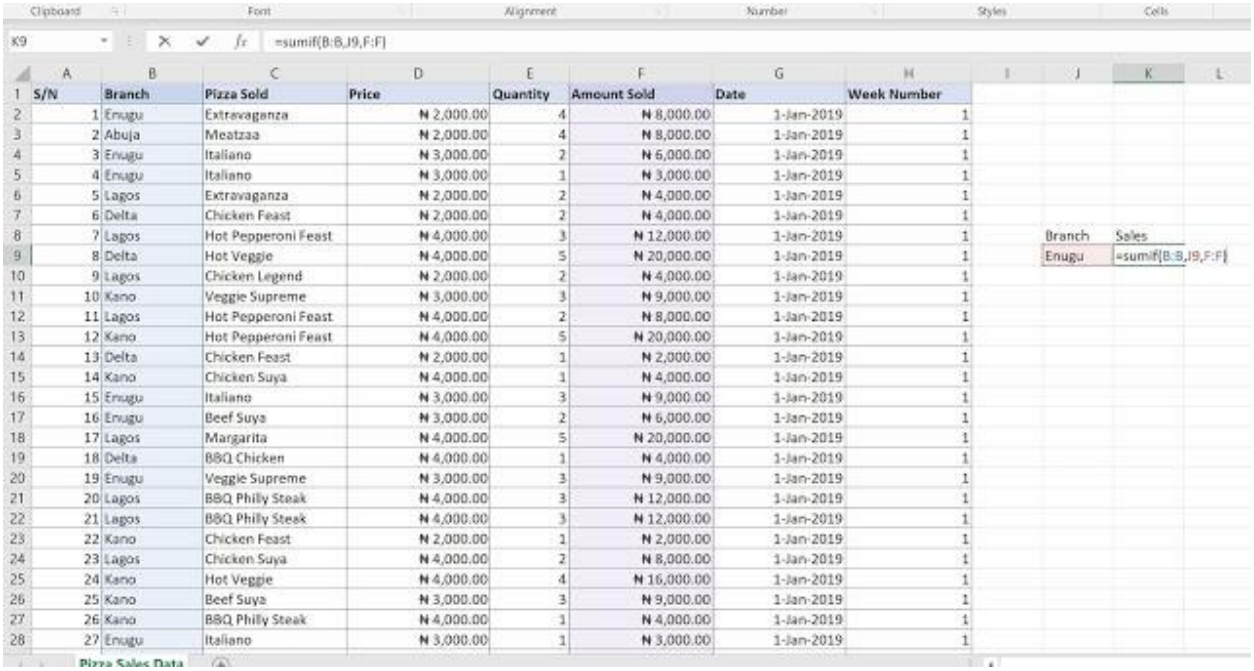
CALCULATE

Anyone wanting to do any serious data analysis with Power BI must be very good friends with CALCULATE. Most resources will tell you that CALCULATE gives you power over the filter context, enabling you to modify it as you wish. Example of one such resource is Microsoft Documentation: https://docs.microsoft.com/en-us/dax/calculate-function-dax

I, however, have an easier to digest way of explaining it to people entirely new to Power BI and don't know what context means.

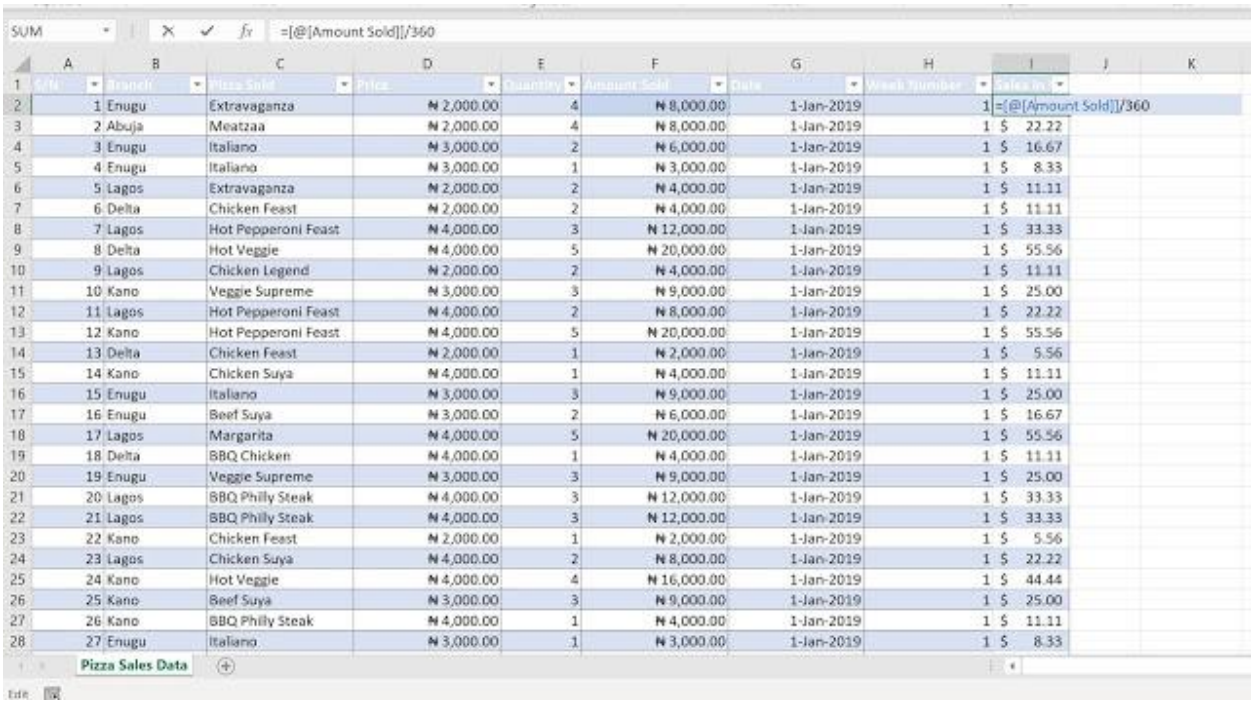
I assume you are already very familiar with Microsoft Excel.

In Microsoft Excel, when you need to do a formula, you simply go into one cell and type out formulas that typically give you back one result which will show in that cell.



S/N	Branch	Pizza Sold	Price	Quantity	Amount Sold	Date	Week Number
1	Enugu	Extravaganza	₦ 2,000.00	4	₦ 8,000.00	1-Jan-2019	1
2	Abuja	Meatzaa	₦ 2,000.00	4	₦ 8,000.00	1-Jan-2019	1
3	Enugu	Italiano	₦ 3,000.00	2	₦ 6,000.00	1-Jan-2019	1
4	Enugu	Italiano	₦ 3,000.00	1	₦ 3,000.00	1-Jan-2019	1
5	Lagos	Extravaganza	₦ 2,000.00	2	₦ 4,000.00	1-Jan-2019	1
6	Delta	Chicken Feast	₦ 2,000.00	2	₦ 4,000.00	1-Jan-2019	1
7	Lagos	Hot Pepperoni Feast	₦ 4,000.00	3	₦ 12,000.00	1-Jan-2019	1
8	Delta	Hot Veggie	₦ 4,000.00	5	₦ 20,000.00	1-Jan-2019	1
9	Lagos	Chicken Legend	₦ 2,000.00	2	₦ 4,000.00	1-Jan-2019	1
10	Kano	Veggie Supreme	₦ 3,000.00	3	₦ 9,000.00	1-Jan-2019	1
11	Lagos	Hot Pepperoni Feast	₦ 4,000.00	2	₦ 8,000.00	1-Jan-2019	1
12	Kano	Hot Pepperoni Feast	₦ 4,000.00	5	₦ 20,000.00	1-Jan-2019	1
13	Delta	Chicken Feast	₦ 2,000.00	1	₦ 2,000.00	1-Jan-2019	1
14	Kano	Chicken Suya	₦ 4,000.00	1	₦ 4,000.00	1-Jan-2019	1
15	Enugu	Italiano	₦ 3,000.00	3	₦ 9,000.00	1-Jan-2019	1
16	Enugu	Beef Suya	₦ 3,000.00	2	₦ 6,000.00	1-Jan-2019	1
17	Lagos	Margarita	₦ 4,000.00	5	₦ 20,000.00	1-Jan-2019	1
18	Delta	BBQ Chicken	₦ 4,000.00	1	₦ 4,000.00	1-Jan-2019	1
19	Enugu	Veggie Supreme	₦ 3,000.00	3	₦ 9,000.00	1-Jan-2019	1
20	Lagos	BBQ Philly Steak	₦ 4,000.00	3	₦ 12,000.00	1-Jan-2019	1
21	Lagos	BBQ Philly Steak	₦ 4,000.00	3	₦ 12,000.00	1-Jan-2019	1
22	Kano	Chicken Feast	₦ 2,000.00	1	₦ 2,000.00	1-Jan-2019	1
23	Lagos	Chicken Suya	₦ 4,000.00	2	₦ 8,000.00	1-Jan-2019	1
24	Kano	Hot Veggie	₦ 4,000.00	4	₦ 16,000.00	1-Jan-2019	1
25	Kano	Beef Suya	₦ 3,000.00	3	₦ 9,000.00	1-Jan-2019	1
26	Kano	BBQ Philly Steak	₦ 4,000.00	1	₦ 4,000.00	1-Jan-2019	1
27	Enugu	Italiano	₦ 3,000.00	1	₦ 3,000.00	1-Jan-2019	1

That is the usual usage pattern. However, there is another way of inputting formulas in Excel. If you convert the Excel data into table (Format as Table), any formula you type in the table works across the table entire rows. You don't have to drag down the formula.



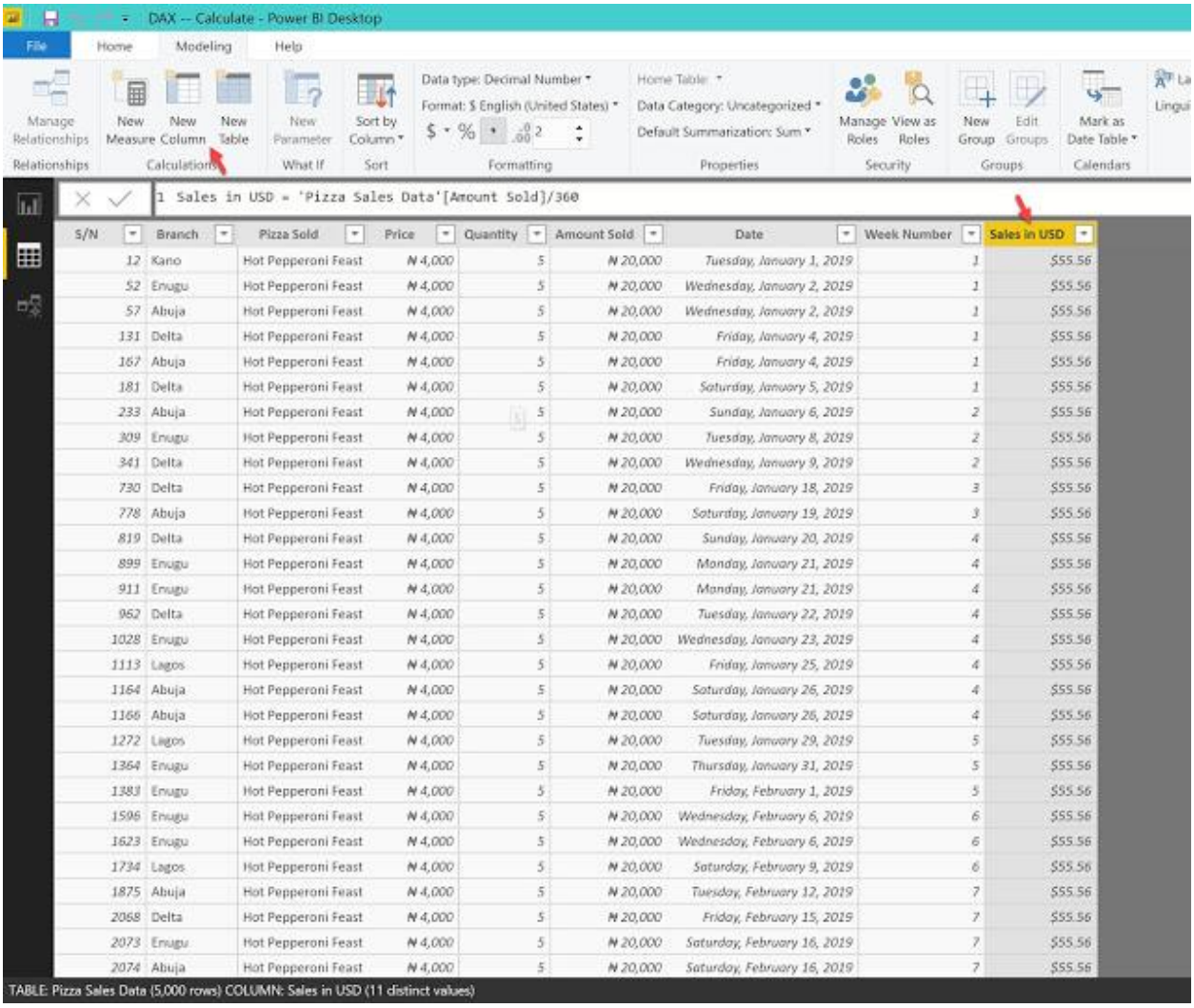
SUM =[@[Amount Sold]]/360

	A	B	C	D	E	F	G	H	I	J	K
1	S/N	Branch	Pizza Sold	Price	Quantity	Amount Sold	Date	Week Number	Sales in $		
2	1	Enugu	Extravaganza	₦ 2,000.00	4	₦ 8,000.00	1-Jan-2019	1	=[@[Amount Sold]]/360		
3	2	Abuja	Meatzaa	₦ 2,000.00	4	₦ 8,000.00	1-Jan-2019	1	$ 22.22		
4	3	Enugu	Italiano	₦ 3,000.00	2	₦ 6,000.00	1-Jan-2019	1	$ 16.67		
5	4	Enugu	Italiano	₦ 3,000.00	1	₦ 3,000.00	1-Jan-2019	1	$ 8.33		
6	5	Lagos	Extravaganza	₦ 2,000.00	2	₦ 4,000.00	1-Jan-2019	1	$ 11.11		
7	6	Delta	Chicken Feast	₦ 2,000.00	2	₦ 4,000.00	1-Jan-2019	1	$ 11.11		
8	7	Lagos	Hot Pepperoni Feast	₦ 4,000.00	3	₦ 12,000.00	1-Jan-2019	1	$ 33.33		
9	8	Delta	Hot Veggie	₦ 4,000.00	5	₦ 20,000.00	1-Jan-2019	1	$ 55.56		
10	9	Lagos	Chicken Legend	₦ 2,000.00	2	₦ 4,000.00	1-Jan-2019	1	$ 11.11		
11	10	Kano	Veggie Supreme	₦ 3,000.00	3	₦ 9,000.00	1-Jan-2019	1	$ 25.00		
12	11	Lagos	Hot Pepperoni Feast	₦ 4,000.00	2	₦ 8,000.00	1-Jan-2019	1	$ 22.22		
13	12	Kano	Hot Pepperoni Feast	₦ 4,000.00	5	₦ 20,000.00	1-Jan-2019	1	$ 55.56		
14	13	Delta	Chicken Feast	₦ 2,000.00	1	₦ 2,000.00	1-Jan-2019	1	$ 5.56		
15	14	Kano	Chicken Suya	₦ 4,000.00	1	₦ 4,000.00	1-Jan-2019	1	$ 11.11		
16	15	Enugu	Italiano	₦ 3,000.00	3	₦ 9,000.00	1-Jan-2019	1	$ 25.00		
17	16	Enugu	Beef Suya	₦ 3,000.00	2	₦ 6,000.00	1-Jan-2019	1	$ 16.67		
18	17	Lagos	Margarita	₦ 4,000.00	5	₦ 20,000.00	1-Jan-2019	1	$ 55.56		
19	18	Delta	BBQ Chicken	₦ 4,000.00	1	₦ 4,000.00	1-Jan-2019	1	$ 11.11		
20	19	Enugu	Veggie Supreme	₦ 3,000.00	3	₦ 9,000.00	1-Jan-2019	1	$ 25.00		
21	20	Lagos	BBQ Philly Steak	₦ 4,000.00	3	₦ 12,000.00	1-Jan-2019	1	$ 33.33		
22	21	Lagos	BBQ Philly Steak	₦ 4,000.00	3	₦ 12,000.00	1-Jan-2019	1	$ 33.33		
23	22	Kano	Chicken Feast	₦ 2,000.00	1	₦ 2,000.00	1-Jan-2019	1	$ 5.56		
24	23	Lagos	Chicken Suya	₦ 4,000.00	2	₦ 8,000.00	1-Jan-2019	1	$ 22.22		
25	24	Kano	Hot Veggie	₦ 4,000.00	4	₦ 16,000.00	1-Jan-2019	1	$ 44.44		
26	25	Kano	Beef Suya	₦ 3,000.00	3	₦ 9,000.00	1-Jan-2019	1	$ 25.00		
27	26	Kano	BBQ Philly Steak	₦ 4,000.00	1	₦ 4,000.00	1-Jan-2019	1	$ 11.11		
28	27	Enugu	Italiano	₦ 3,000.00	1	₦ 3,000.00	1-Jan-2019	1	$ 8.33		

Pizza Sales Data

How does all these relate to Power BI?

Well, the more intuitive way of entering formulas in Power BI is the second way I mentioned. Any formula you enter gets computed for the entire rows in the table. It's called New Column.



S/N	Branch	Pizza Sold	Price	Quantity	Amount Sold	Date	Week Number	Sales in USD
12	Kano	Hot Pepperoni Feast	₦ 4,000	5	₦ 20,000	Tuesday, January 1, 2019	1	$55.56
52	Enugu	Hot Pepperoni Feast	₦ 4,000	5	₦ 20,000	Wednesday, January 2, 2019	1	$55.56
57	Abuja	Hot Pepperoni Feast	₦ 4,000	5	₦ 20,000	Wednesday, January 2, 2019	1	$55.56
131	Delta	Hot Pepperoni Feast	₦ 4,000	5	₦ 20,000	Friday, January 4, 2019	1	$55.56
167	Abuja	Hot Pepperoni Feast	₦ 4,000	5	₦ 20,000	Friday, January 4, 2019	1	$55.56
181	Delta	Hot Pepperoni Feast	₦ 4,000	5	₦ 20,000	Saturday, January 5, 2019	1	$55.56
233	Abuja	Hot Pepperoni Feast	₦ 4,000	5	₦ 20,000	Sunday, January 6, 2019	2	$55.56
309	Enugu	Hot Pepperoni Feast	₦ 4,000	5	₦ 20,000	Tuesday, January 8, 2019	2	$55.56
341	Delta	Hot Pepperoni Feast	₦ 4,000	5	₦ 20,000	Wednesday, January 9, 2019	2	$55.56
730	Delta	Hot Pepperoni Feast	₦ 4,000	5	₦ 20,000	Friday, January 18, 2019	3	$55.56
778	Abuja	Hot Pepperoni Feast	₦ 4,000	5	₦ 20,000	Saturday, January 19, 2019	3	$55.56
819	Delta	Hot Pepperoni Feast	₦ 4,000	5	₦ 20,000	Sunday, January 20, 2019	4	$55.56
899	Enugu	Hot Pepperoni Feast	₦ 4,000	5	₦ 20,000	Monday, January 21, 2019	4	$55.56
911	Enugu	Hot Pepperoni Feast	₦ 4,000	5	₦ 20,000	Monday, January 21, 2019	4	$55.56
962	Delta	Hot Pepperoni Feast	₦ 4,000	5	₦ 20,000	Tuesday, January 22, 2019	4	$55.56
1028	Enugu	Hot Pepperoni Feast	₦ 4,000	5	₦ 20,000	Wednesday, January 23, 2019	4	$55.56
1113	Lagos	Hot Pepperoni Feast	₦ 4,000	5	₦ 20,000	Friday, January 25, 2019	4	$55.56
1164	Abuja	Hot Pepperoni Feast	₦ 4,000	5	₦ 20,000	Saturday, January 26, 2019	4	$55.56
1166	Abuja	Hot Pepperoni Feast	₦ 4,000	5	₦ 20,000	Saturday, January 26, 2019	4	$55.56
1272	Lagos	Hot Pepperoni Feast	₦ 4,000	5	₦ 20,000	Tuesday, January 29, 2019	5	$55.56
1364	Enugu	Hot Pepperoni Feast	₦ 4,000	5	₦ 20,000	Thursday, January 31, 2019	5	$55.56
1383	Enugu	Hot Pepperoni Feast	₦ 4,000	5	₦ 20,000	Friday, February 1, 2019	5	$55.56
1596	Enugu	Hot Pepperoni Feast	₦ 4,000	5	₦ 20,000	Wednesday, February 6, 2019	6	$55.56
1623	Enugu	Hot Pepperoni Feast	₦ 4,000	5	₦ 20,000	Wednesday, February 6, 2019	6	$55.56
1734	Lagos	Hot Pepperoni Feast	₦ 4,000	5	₦ 20,000	Saturday, February 9, 2019	6	$55.56
1875	Abuja	Hot Pepperoni Feast	₦ 4,000	5	₦ 20,000	Tuesday, February 12, 2019	7	$55.56
2068	Delta	Hot Pepperoni Feast	₦ 4,000	5	₦ 20,000	Friday, February 15, 2019	7	$55.56
2073	Enugu	Hot Pepperoni Feast	₦ 4,000	5	₦ 20,000	Saturday, February 16, 2019	7	$55.56
2074	Abuja	Hot Pepperoni Feast	₦ 4,000	5	₦ 20,000	Saturday, February 16, 2019	7	$55.56

But what if you want to calculate the total sales for Enugu branch, like I did in the first Excel screenshot? Well, one has to do a New Measure, as that is what gives you one value rather than values as many as the number of rows in our table. In Excel, this would be easily solved with a SUMIF.

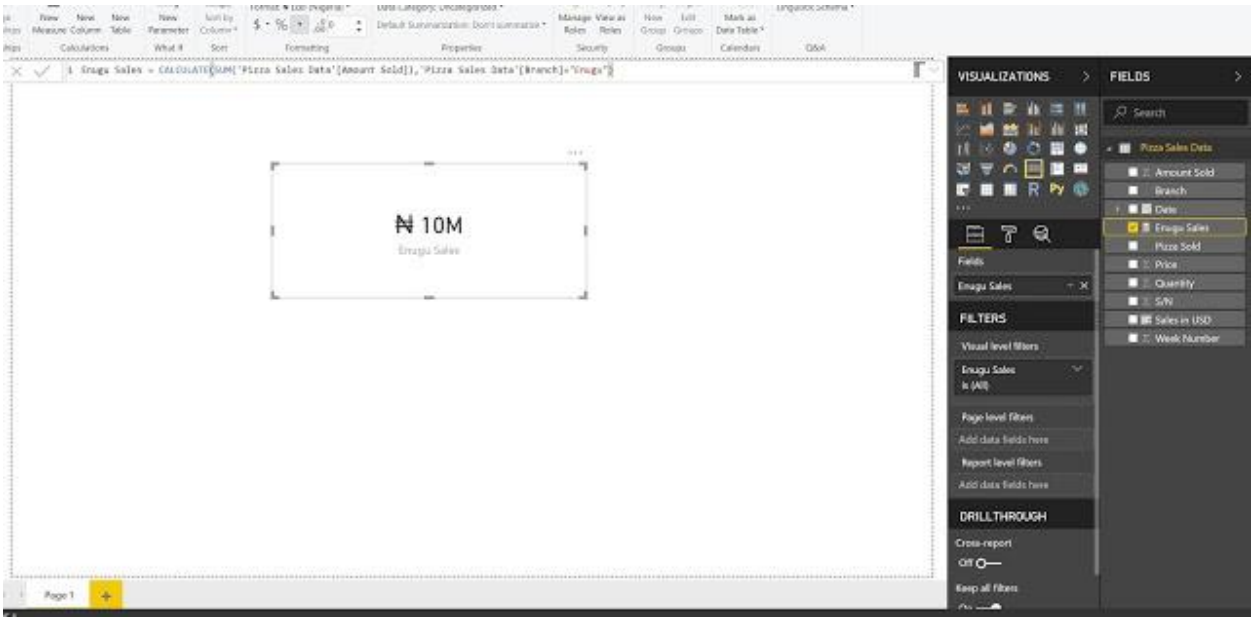
In Power BI, there is no SUMIF nor COUNTIF nor AVERAGEIF nor SUBTOTAL. Rather what you have is this amazing formula called CALCULATE. It makes it possible to extract out the rows/records that meet conditions you specify and then you run any normal aggregation/expression on the extract (like SUM, AVERAGE etc). So it is your SUMIF, COUNTIF, AVERAGEIF and many more common formulas you use in Excel. In fact, it is more than all of them. It does near magical things.

So how does CALCULATE work?

You specify the aggregation/expression you want and then put in filter conditions to narrow down to just the very records you want to run that expression on.

In this very example I have shown via screenshots, here is the CALCULATE formula I entered:

Enugu Sales = CALCULATE(SUM('Pizza Sales Data'[Amount Sold]),'Pizza Sales Data'[Branch]="Enugu")



And that's how CALCULATE works.

However, don't be deceived by the simple straightforward example I have used. As you progress in your Power BI journey you will definitely have to get comfortable mixing CALCULATE with FILTER, ALL, ALLEXCEPT and many other DAX formulas. That's where the true mastery and magic lie.

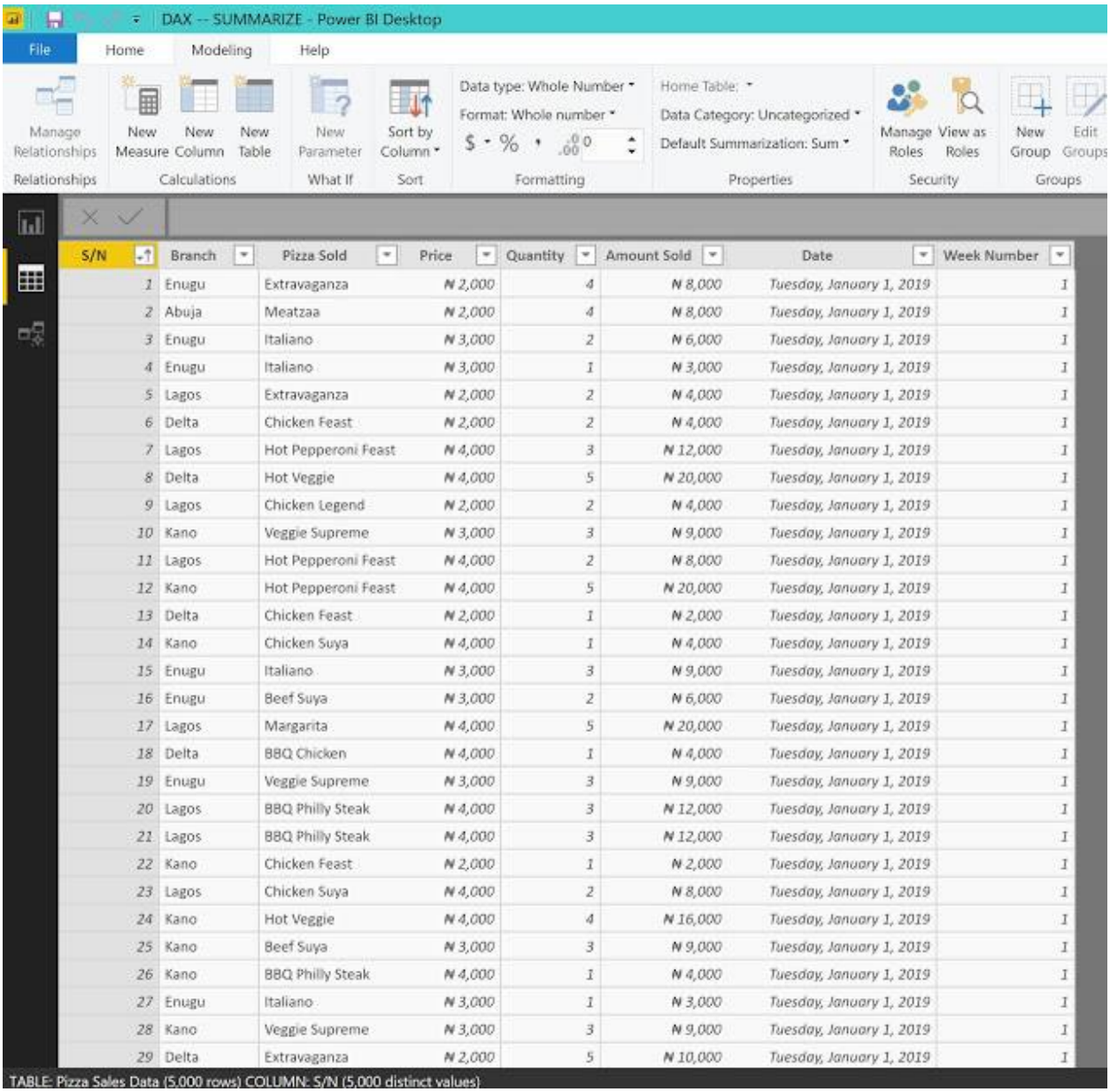
You can watch my YouTube tutorial: https://youtu.be/Vzro-tgDr_8

SUMMARIZE

I once facilitated a Power BI training where the participants needed to generate a new table from the sales transaction data (that comes from the ERP) in such a way that they would see all the sales regions, products, Year-Month and total sales quantity.

To achieve that, we used the DAX formula: SUMMARIZE

So here's what the sample data I am going to use look like:

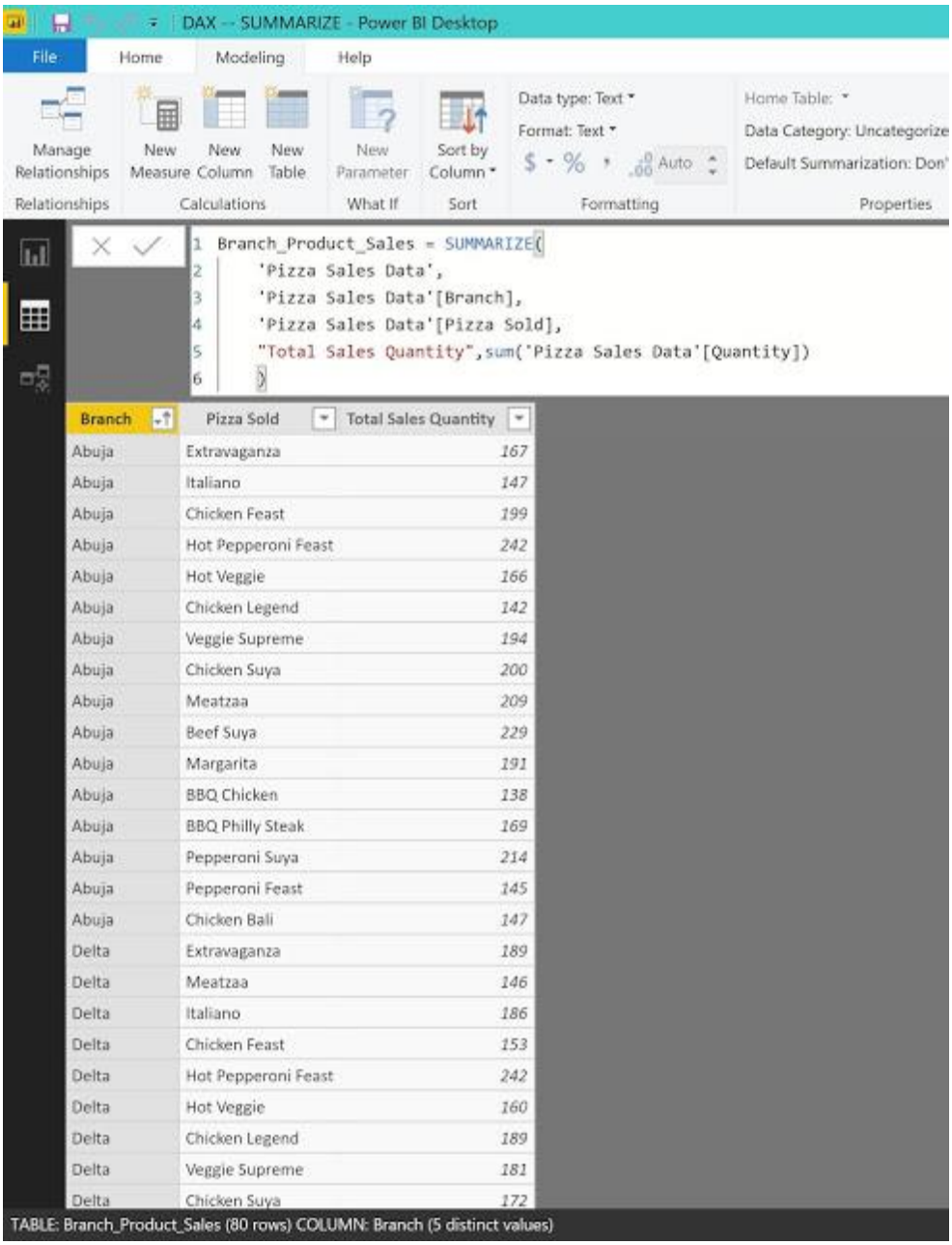


S/N	Branch	Pizza Sold	Price	Quantity	Amount Sold	Date	Week Number
1	Enugu	Extravaganza	₦ 2,000	4	₦ 8,000	Tuesday, January 1, 2019	1
2	Abuja	Meatzaa	₦ 2,000	4	₦ 8,000	Tuesday, January 1, 2019	1
3	Enugu	Italiano	₦ 3,000	2	₦ 6,000	Tuesday, January 1, 2019	1
4	Enugu	Italiano	₦ 3,000	1	₦ 3,000	Tuesday, January 1, 2019	1
5	Lagos	Extravaganza	₦ 2,000	2	₦ 4,000	Tuesday, January 1, 2019	1
6	Delta	Chicken Feast	₦ 2,000	2	₦ 4,000	Tuesday, January 1, 2019	1
7	Lagos	Hot Pepperoni Feast	₦ 4,000	3	₦ 12,000	Tuesday, January 1, 2019	1
8	Delta	Hot Veggie	₦ 4,000	5	₦ 20,000	Tuesday, January 1, 2019	1
9	Lagos	Chicken Legend	₦ 2,000	2	₦ 4,000	Tuesday, January 1, 2019	1
10	Kano	Veggie Supreme	₦ 3,000	3	₦ 9,000	Tuesday, January 1, 2019	1
11	Lagos	Hot Pepperoni Feast	₦ 4,000	2	₦ 8,000	Tuesday, January 1, 2019	1
12	Kano	Hot Pepperoni Feast	₦ 4,000	5	₦ 20,000	Tuesday, January 1, 2019	1
13	Delta	Chicken Feast	₦ 2,000	1	₦ 2,000	Tuesday, January 1, 2019	1
14	Kano	Chicken Suya	₦ 4,000	1	₦ 4,000	Tuesday, January 1, 2019	1
15	Enugu	Italiano	₦ 3,000	3	₦ 9,000	Tuesday, January 1, 2019	1
16	Enugu	Beef Suya	₦ 3,000	2	₦ 6,000	Tuesday, January 1, 2019	1
17	Lagos	Margarita	₦ 4,000	5	₦ 20,000	Tuesday, January 1, 2019	1
18	Delta	BBQ Chicken	₦ 4,000	1	₦ 4,000	Tuesday, January 1, 2019	1
19	Enugu	Veggie Supreme	₦ 3,000	3	₦ 9,000	Tuesday, January 1, 2019	1
20	Lagos	BBQ Philly Steak	₦ 4,000	3	₦ 12,000	Tuesday, January 1, 2019	1
21	Lagos	BBQ Philly Steak	₦ 4,000	3	₦ 12,000	Tuesday, January 1, 2019	1
22	Kano	Chicken Feast	₦ 2,000	1	₦ 2,000	Tuesday, January 1, 2019	1
23	Lagos	Chicken Suya	₦ 4,000	2	₦ 8,000	Tuesday, January 1, 2019	1
24	Kano	Hot Veggie	₦ 4,000	4	₦ 16,000	Tuesday, January 1, 2019	1
25	Kano	Beef Suya	₦ 3,000	3	₦ 9,000	Tuesday, January 1, 2019	1
26	Kano	BBQ Philly Steak	₦ 4,000	1	₦ 4,000	Tuesday, January 1, 2019	1
27	Enugu	Italiano	₦ 3,000	1	₦ 3,000	Tuesday, January 1, 2019	1
28	Kano	Veggie Supreme	₦ 3,000	3	₦ 9,000	Tuesday, January 1, 2019	1
29	Delta	Extravaganza	₦ 2,000	5	₦ 10,000	Tuesday, January 1, 2019	1

TABLE: Pizza Sales Data (5,000 rows) COLUMN: S/N (5,000 distinct values)

And the new table Formula I'll enter is:

```
Branch_Product_Sales = SUMMARIZE(
    'Pizza Sales Data',
    'Pizza Sales Data'[Branch],
    'Pizza Sales Data'[Pizza Sold],
    "Total Sales Quantity",sum('Pizza Sales Data'[Quantity])
    )
```



You can read up on the official documentation of SUMMARIZE: https://docs.microsoft.com/en-us/dax/summarize-function-dax

In essence, how the syntax works is you put in the table name, the columns you want to pick unique items from (combines across the columns, though, which makes it show all the different products for the different branches repeating branches as many times as necessary to show products in that branch) and you add the aggregation formula to run on a column with the values to do a computation on (indicating the name to give the generated column).

There's a more complex use of SUMMARIZE that involves using ROLLUP and/or

ROLLUPGROUP. You can get a sense of what they do by going through the already given documentation link.

Here's my short video to demonstrate the formula: https://youtu.be/X8mqjSQ9gOo

CALENDAR

If there exists a book of ten commandments for Power BI, one of the commandments will be -- always have a date table.

A date table is a table that has just dates, and maybe any derivative of a date (month, quarter, year etc.)

Why do you need a date table?

Two easy/quick reasons:

1. You have many tables with date columns in each. It is better to have one table to include all the date periods you need and be related to all these other tables.
2. Even if you have just one table, as long as that table can have date gaps or 1900 for some records or 2090 for some records; you'll want to have your own better controlled date table rather than battle endlessly with wrong date entries in source data table. This is common when old data are migrated from a legacy tool.

So how do you create a DATE table easily in Power BI?

The answer is CALENDAR.

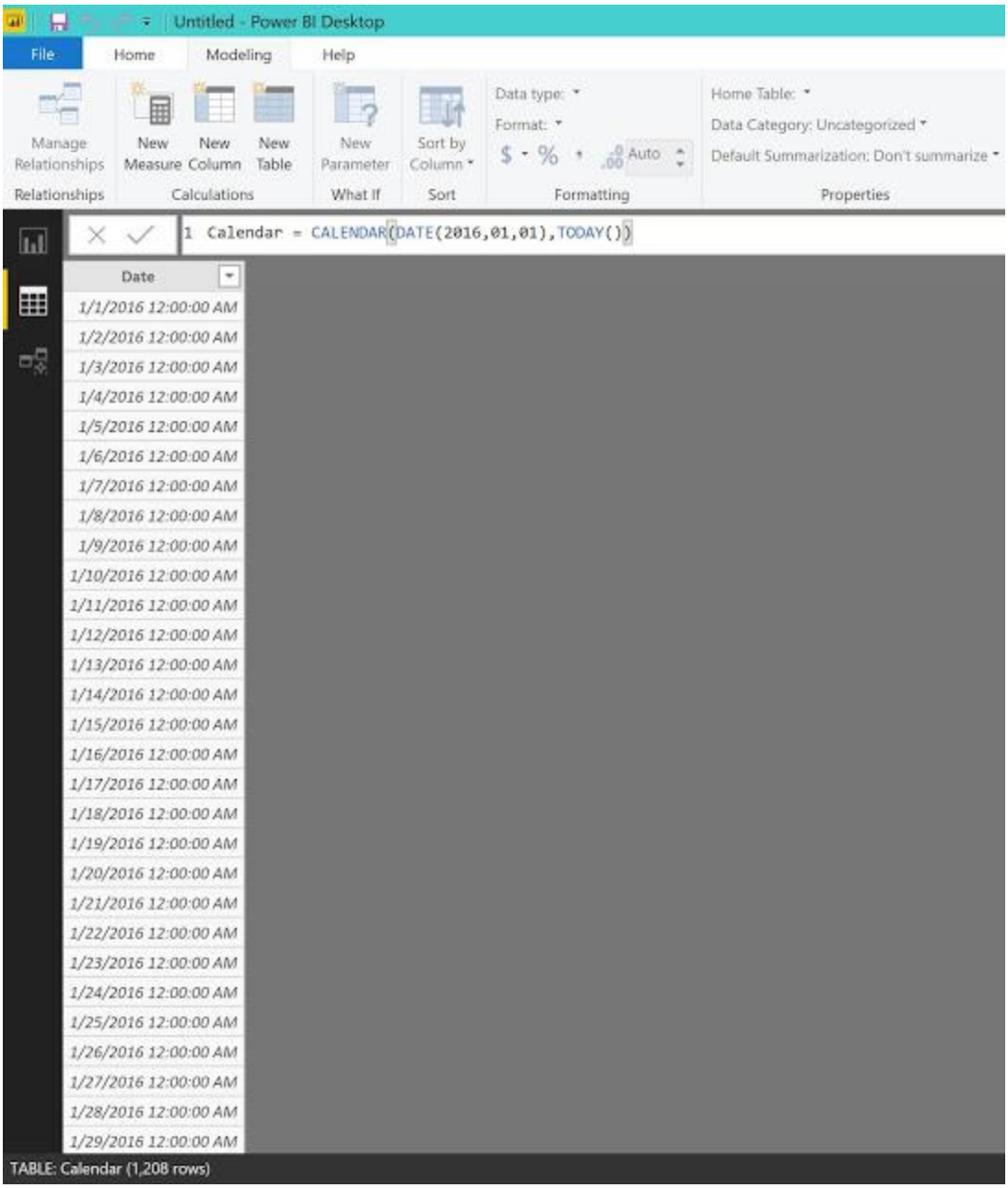
If I know how far back I want to go, then I would just specify that date as the start date and today as the end date.

Some other times, I would let CALENDAR use FIRSTDATE to get start date and LASTDATE to get end date.

Other times, I would specify a specific date and specify a specific end date (not TODAY, could be a future date).

For this illustration, I would use a specific start date and TODAY as the end date. Power BI will always increment the dates everyday -- that is the magic of putting TODAY as end date.

```
Calendar = CALENDAR(DATE(2016,01,01),TODAY())
```



Notice I used DATE to put in the specific date.

You can watch my YouTube tutorial: https://youtu.be/oodi9Vz0eeQ

VALUES

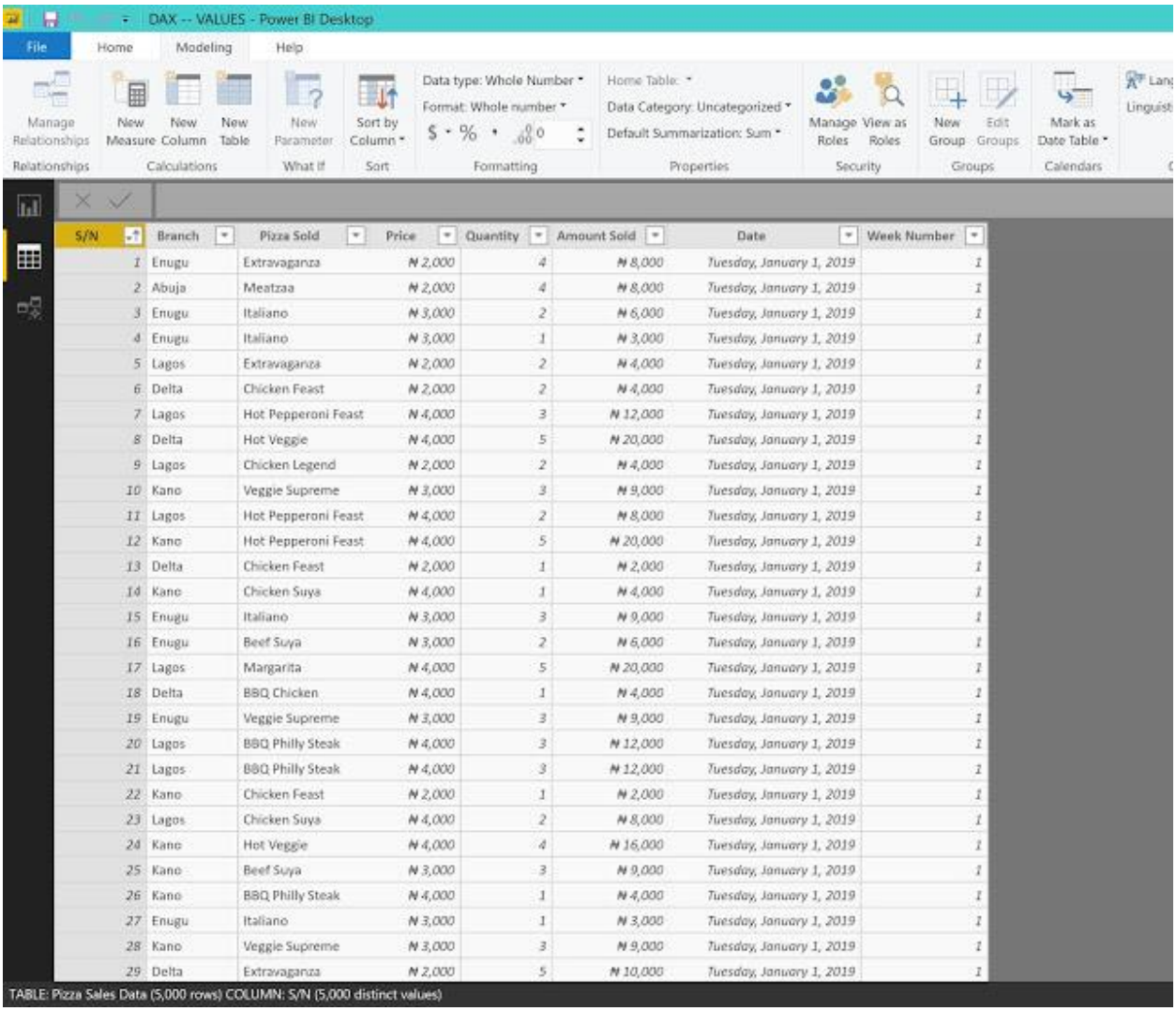
One common situation sales analysts face is capturing newly introduced products or SKUs or Region or Sales Rep in their reports. In Excel, you'll have to do something extra -- and if you are not an Excel ninja, that something extra can be very significant and time costly.

With Power BI, you might not need to do anything extra if you are good with using VALUES.

Say you are the sales analyst for Mega Pizza. Everyday you report sales by branch. But every couple of months, a new branch is opened. On the ERP the sales for each new branch is automatically captured, but on your report you'll have to include this new branch and assign it the general target given to all branches.

How will you achieve this automatically in Power BI without having to do any extra/manual intervention when a new branch is live? The answer is VALUES

First, a screenshot of what the transaction data from the ERP looks like.



S/N	Branch	Pizza Sold	Price	Quantity	Amount Sold	Date	Week Number
1	Enugu	Extravaganza	₦ 2,000	4	₦ 8,000	Tuesday, January 1, 2019	1
2	Abuja	Meatzaa	₦ 2,000	4	₦ 8,000	Tuesday, January 1, 2019	1
3	Enugu	Italiano	₦ 3,000	2	₦ 6,000	Tuesday, January 1, 2019	1
4	Enugu	Italiano	₦ 3,000	1	₦ 3,000	Tuesday, January 1, 2019	1
5	Lagos	Extravaganza	₦ 2,000	2	₦ 4,000	Tuesday, January 1, 2019	1
6	Delta	Chicken Feast	₦ 2,000	2	₦ 4,000	Tuesday, January 1, 2019	1
7	Lagos	Hot Pepperoni Feast	₦ 4,000	3	₦ 12,000	Tuesday, January 1, 2019	1
8	Delta	Hot Veggie	₦ 4,000	5	₦ 20,000	Tuesday, January 1, 2019	1
9	Lagos	Chicken Legend	₦ 2,000	2	₦ 4,000	Tuesday, January 1, 2019	1
10	Kano	Veggie Supreme	₦ 3,000	3	₦ 9,000	Tuesday, January 1, 2019	1
11	Lagos	Hot Pepperoni Feast	₦ 4,000	2	₦ 8,000	Tuesday, January 1, 2019	1
12	Kano	Hot Pepperoni Feast	₦ 4,000	5	₦ 20,000	Tuesday, January 1, 2019	1
13	Delta	Chicken Feast	₦ 2,000	1	₦ 2,000	Tuesday, January 1, 2019	1
14	Kano	Chicken Suya	₦ 4,000	1	₦ 4,000	Tuesday, January 1, 2019	1
15	Enugu	Italiano	₦ 3,000	3	₦ 9,000	Tuesday, January 1, 2019	1
16	Enugu	Beef Suya	₦ 3,000	2	₦ 6,000	Tuesday, January 1, 2019	1
17	Lagos	Margarita	₦ 4,000	5	₦ 20,000	Tuesday, January 1, 2019	1
18	Delta	BBQ Chicken	₦ 4,000	1	₦ 4,000	Tuesday, January 1, 2019	1
19	Enugu	Veggie Supreme	₦ 3,000	3	₦ 9,000	Tuesday, January 1, 2019	1
20	Lagos	BBQ Philly Steak	₦ 4,000	3	₦ 12,000	Tuesday, January 1, 2019	1
21	Lagos	BBQ Philly Steak	₦ 4,000	3	₦ 12,000	Tuesday, January 1, 2019	1
22	Kano	Chicken Feast	₦ 2,000	1	₦ 2,000	Tuesday, January 1, 2019	1
23	Lagos	Chicken Suya	₦ 4,000	2	₦ 8,000	Tuesday, January 1, 2019	1
24	Kano	Hot Veggie	₦ 4,000	4	₦ 16,000	Tuesday, January 1, 2019	1
25	Kano	Beef Suya	₦ 3,000	3	₦ 9,000	Tuesday, January 1, 2019	1
26	Kano	BBQ Philly Steak	₦ 4,000	1	₦ 4,000	Tuesday, January 1, 2019	1
27	Enugu	Italiano	₦ 3,000	1	₦ 3,000	Tuesday, January 1, 2019	1
28	Kano	Veggie Supreme	₦ 3,000	3	₦ 9,000	Tuesday, January 1, 2019	1
29	Delta	Extravaganza	₦ 2,000	5	₦ 10,000	Tuesday, January 1, 2019	1

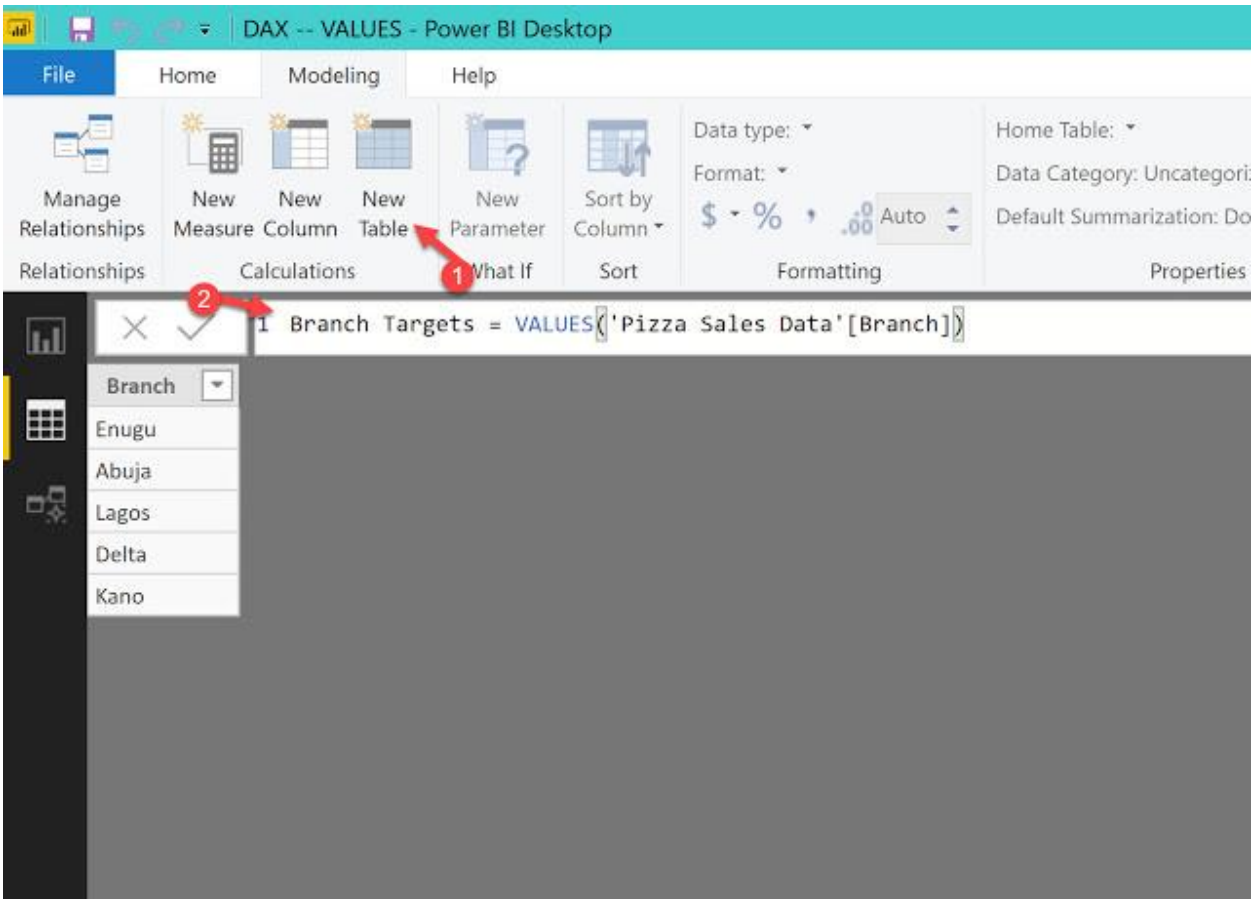
We are going to create a new table from this table extracting the unique list of branches from the ERP live data table. And that's exactly what VALUES does.

VALUES is the DAX formula that extracts a unique list of records from a table or column. You can read more about it from Microsoft Documentation: https://docs.microsoft.com/en-us/dax/values-function-dax

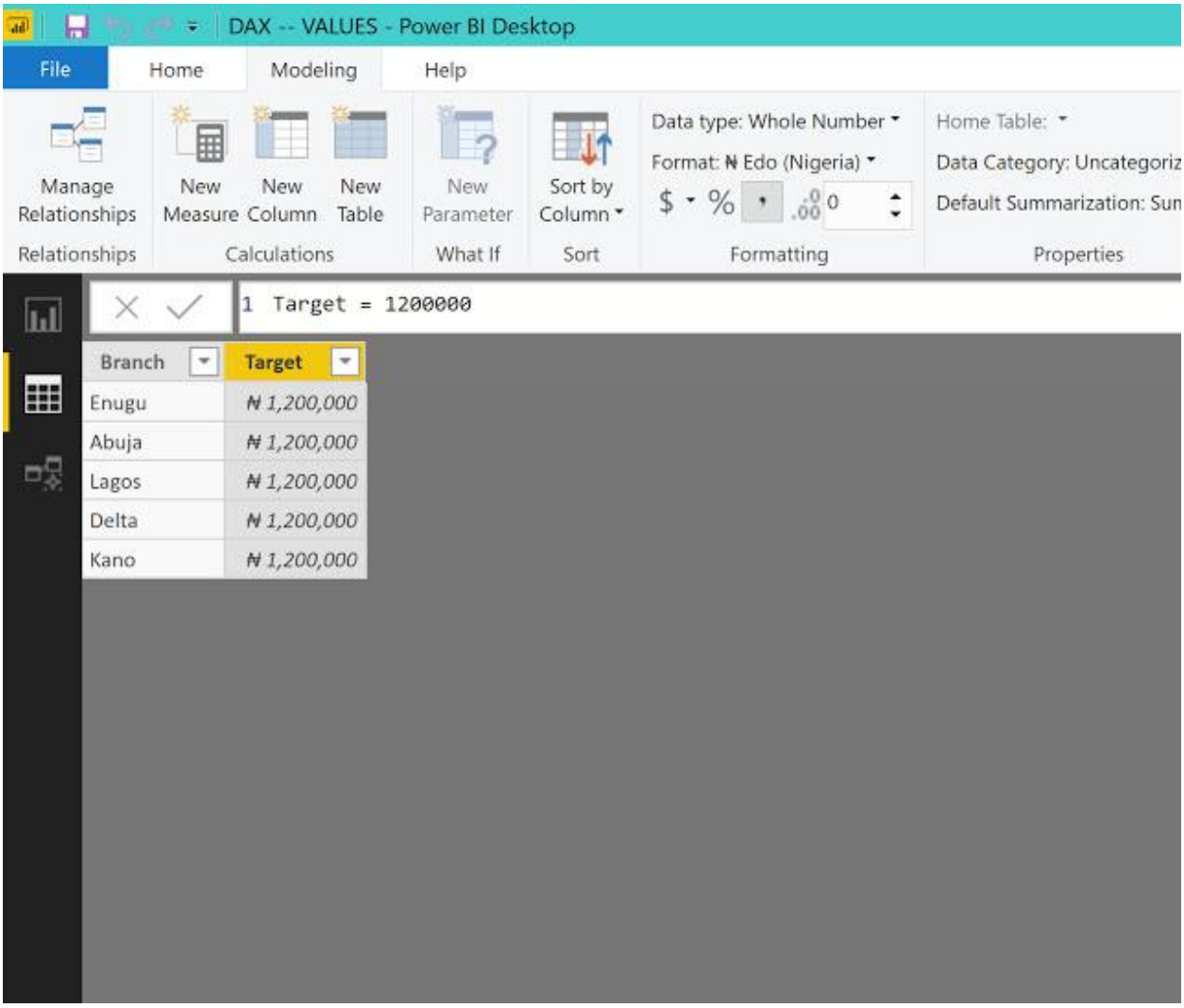
There is also DISTINCT but VALUES allows for referential integrity check which makes it a better choice for most tasks. If you read through the documentation link I gave you'll get a more thorough explanation of what I mean by referential integrity check and practical difference between VALUES and DISTINCT.

And here's how to use VALUES for the scenario I just described.

Branch Targets = VALUES('Pizza Sales Data'[Branch])



And to finally make it meaningful. I add a New Column that assigns the target all branches are given (assuming Mega Pizza doesn't discriminate in its target allocation).



You can watch my YouTube tutorial: https://youtu.be/pLZhm0R2KrU

CROSSJOIN

CROSSJOIN is a DAX formula that generates the cartesian product of all the rows in tables inputted into the formula argument. You can go through Microsoft's official documentation on it at https://docs.microsoft.com/en-us/dax/crossjoin-function-dax

CASE STUDY

ABC Limited has five branches across Nigeria and sells four products. Each product has same target across all the branches.

Branch	Manager
Lagos	Jide Aje
Abuja	Ahmed Kazeem

Kaduna	Sanni Eze
Port Harcourt	Joe Opoi
Enugu	Chika Nwabueze

Product	Target
Product A	100
Product B	120
Product C	90
Product D	130

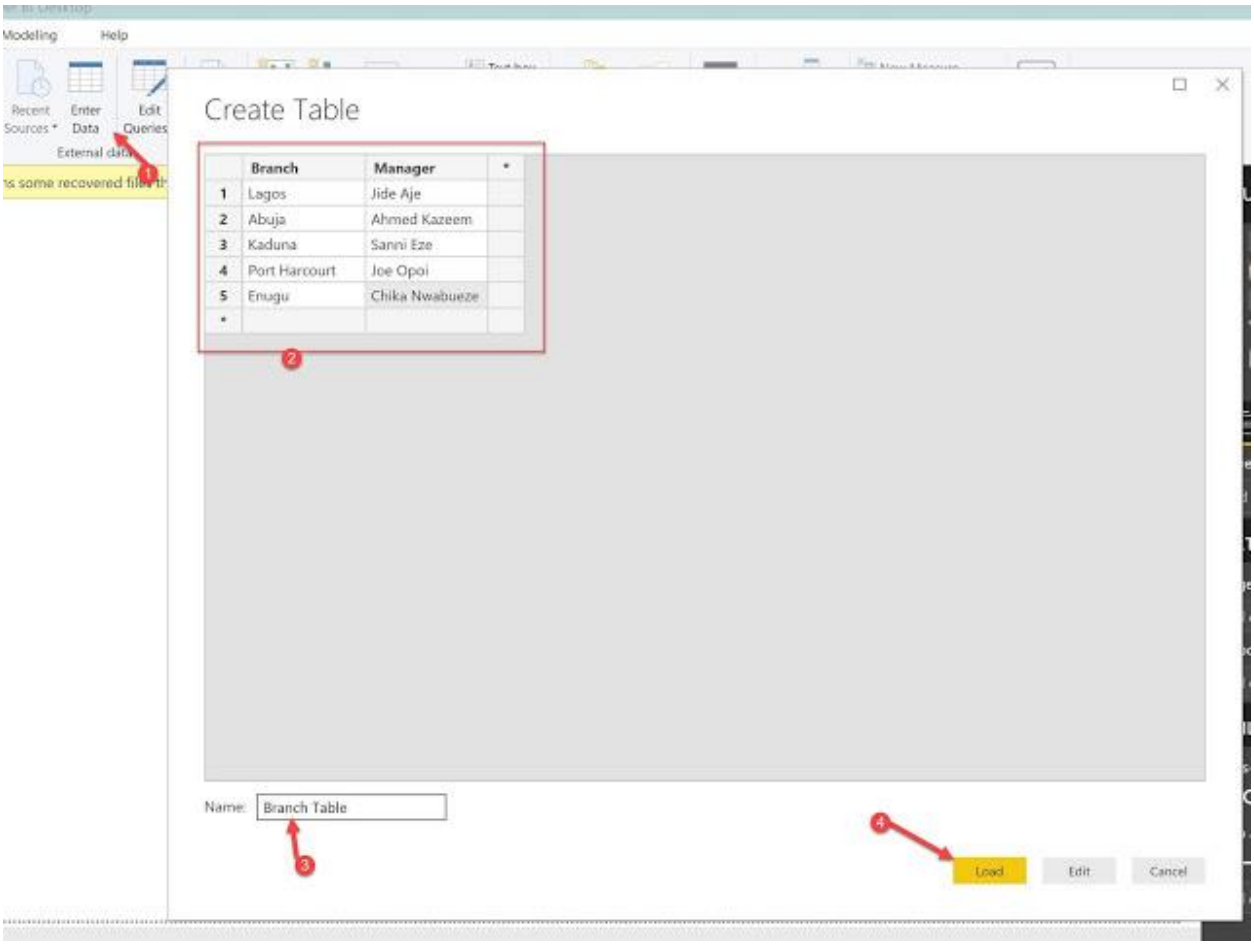
You are to generate a new table that will combine these two tables into one -- having all four products with assigned targets showing for all the five branches.

Branch	Manager	Product	Target
Lagos	Jide Aje	Product C	90
Abuja	Ahmed Kazeem	Product C	90
Kaduna	Sanni Eze	Product C	90
Port Harcourt	Joe Opoi	Product C	90
Enugu	Chika Nwabueze	Product C	90
Lagos	Jide Aje	Product A	100
Abuja	Ahmed Kazeem	Product A	100
Kaduna	Sanni Eze	Product A	100
Port Harcourt	Joe Opoi	Product A	100
Enugu	Chika Nwabueze	Product A	100
Lagos	Jide Aje	Product B	120
Abuja	Ahmed Kazeem	Product B	120
Kaduna	Sanni Eze	Product B	120
Port Harcourt	Joe Opoi	Product B	120
Enugu	Chika Nwabueze	Product B	120
Lagos	Jide Aje	Product D	130
Abuja	Ahmed Kazeem	Product D	130
Kaduna	Sanni Eze	Product D	130
Port Harcourt	Joe Opoi	Product D	130
Enugu	Chika Nwabueze	Product D	130

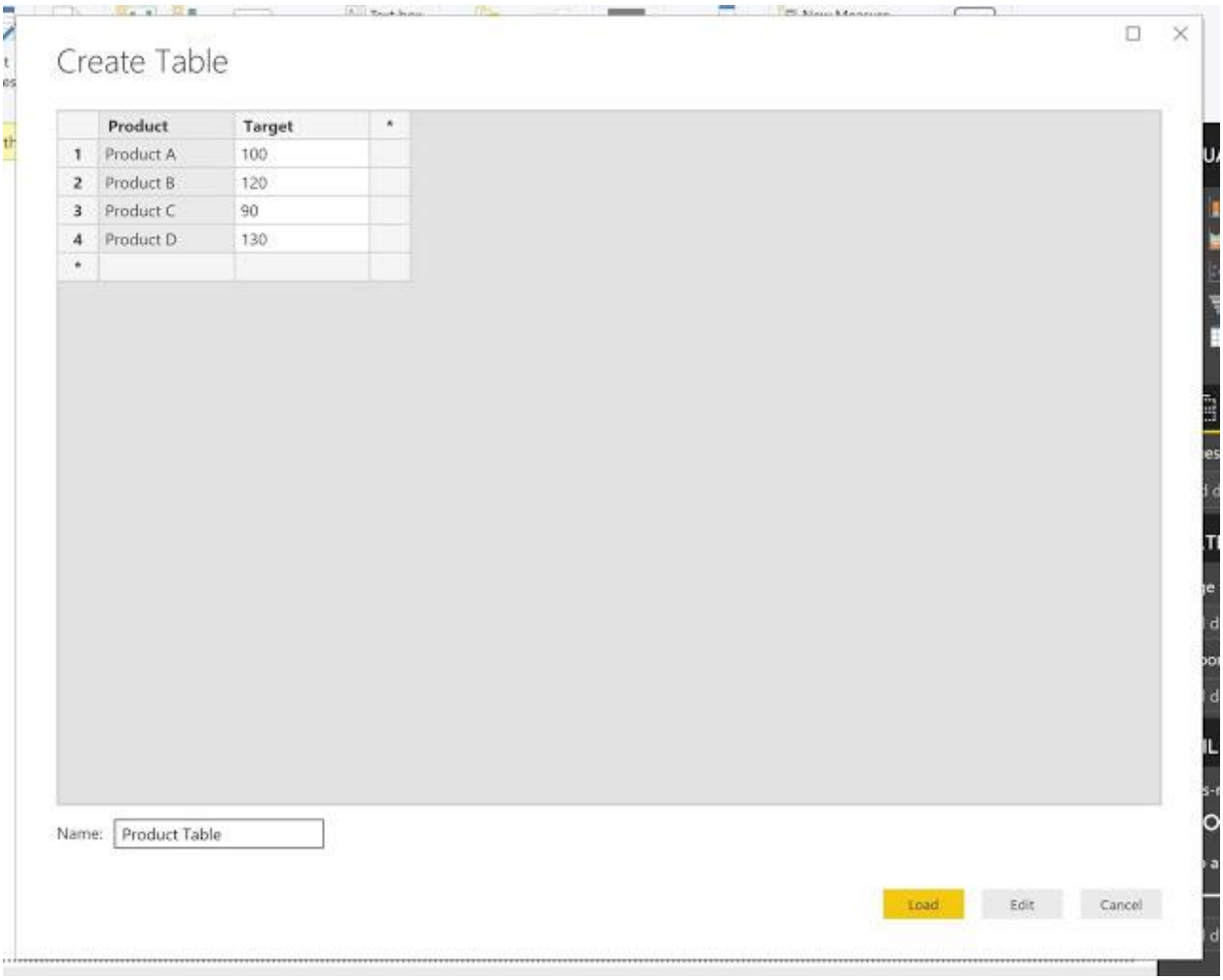
So how do we achieve this?

ANSWER: CROSSJOIN

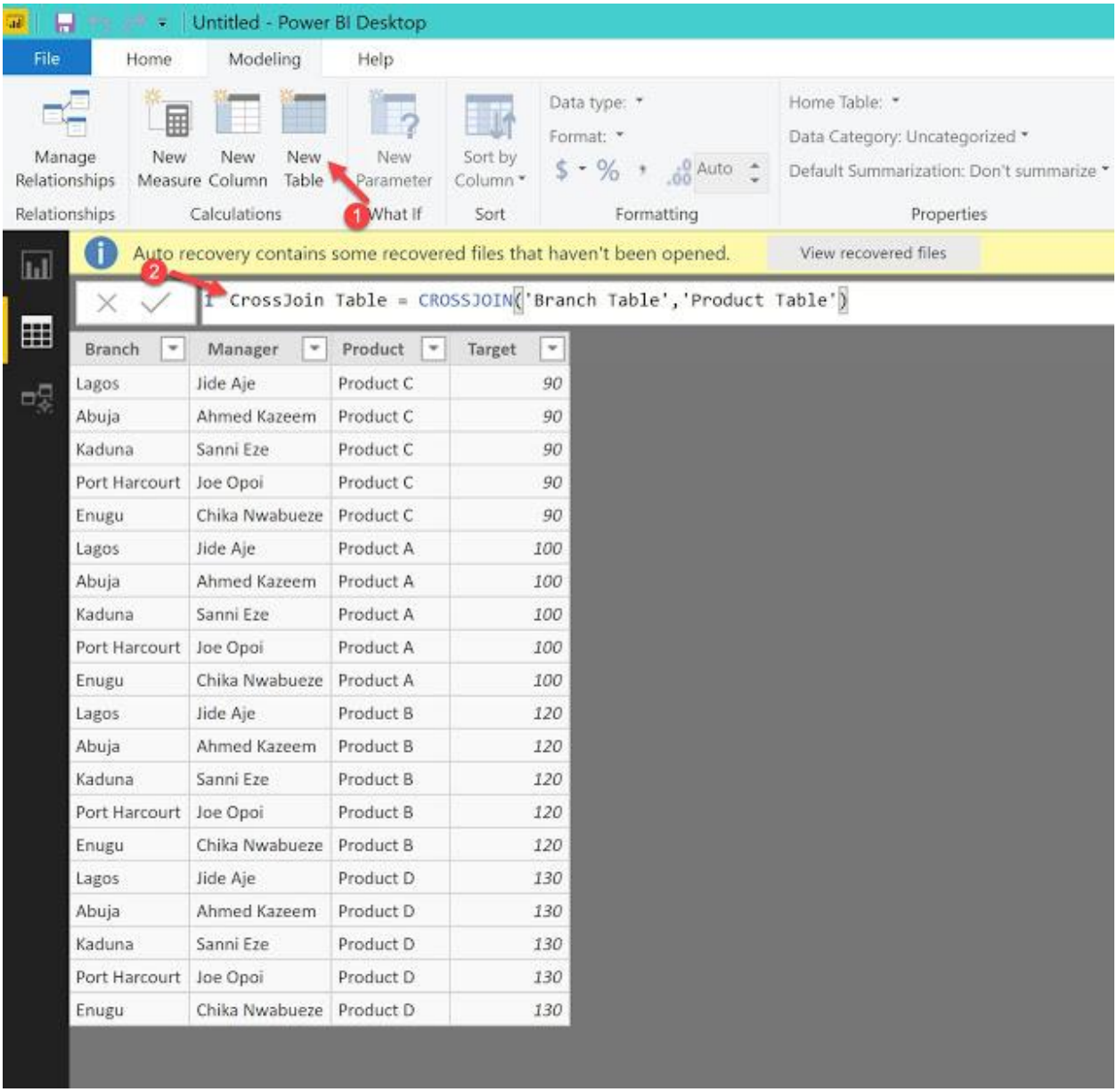
If you want to follow along and recreate this tutorial, just launch Power BI. And under Home menu, click on Enter Data. Copy paste or type in the Branch table data.



Repeat same steps for Product table.



And to the magic step: under Modeling menu, click on New Table and type CrossJoin Table = CROSSJOIN('Branch Table','Product Table')



Branch	Manager	Product	Target
Lagos	Jide Aje	Product C	90
Abuja	Ahmed Kazeem	Product C	90
Kaduna	Sanni Eze	Product C	90
Port Harcourt	Joe Opoi	Product C	90
Enugu	Chika Nwabueze	Product C	90
Lagos	Jide Aje	Product A	100
Abuja	Ahmed Kazeem	Product A	100
Kaduna	Sanni Eze	Product A	100
Port Harcourt	Joe Opoi	Product A	100
Enugu	Chika Nwabueze	Product A	100
Lagos	Jide Aje	Product B	120
Abuja	Ahmed Kazeem	Product B	120
Kaduna	Sanni Eze	Product B	120
Port Harcourt	Joe Opoi	Product B	120
Enugu	Chika Nwabueze	Product B	120
Lagos	Jide Aje	Product D	130
Abuja	Ahmed Kazeem	Product D	130
Kaduna	Sanni Eze	Product D	130
Port Harcourt	Joe Opoi	Product D	130
Enugu	Chika Nwabueze	Product D	130

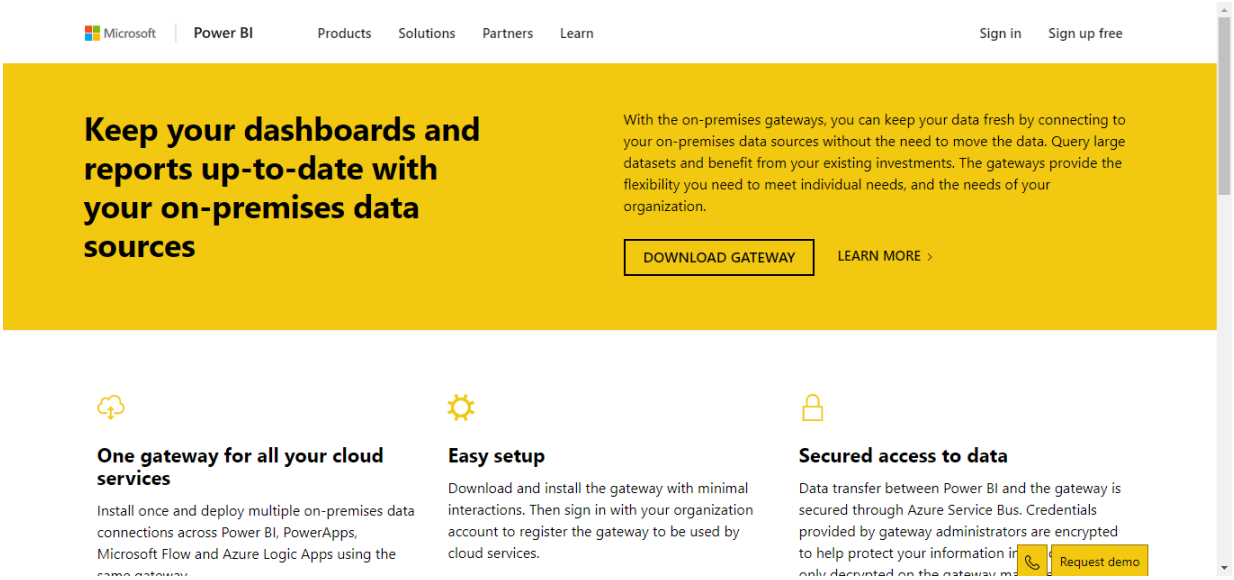
Data Gateway and Other Complementary Tools

Power BI has a few tools that extend its base features. One of the main ones is the data gateway which allows you to sync with on-premise data sources. Most of the other Complementary tools allow integrating Excel with Power BI.

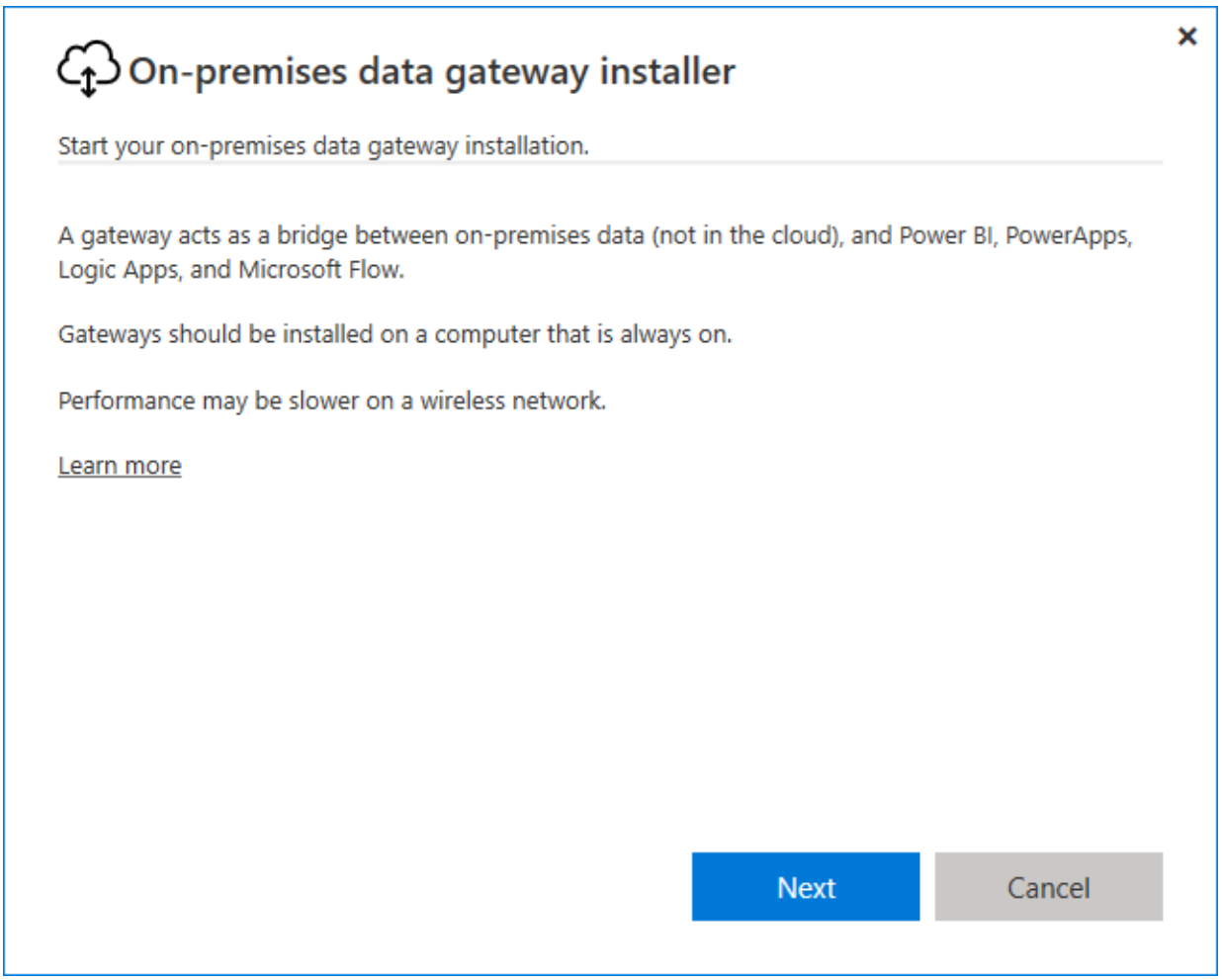
Data Gateway

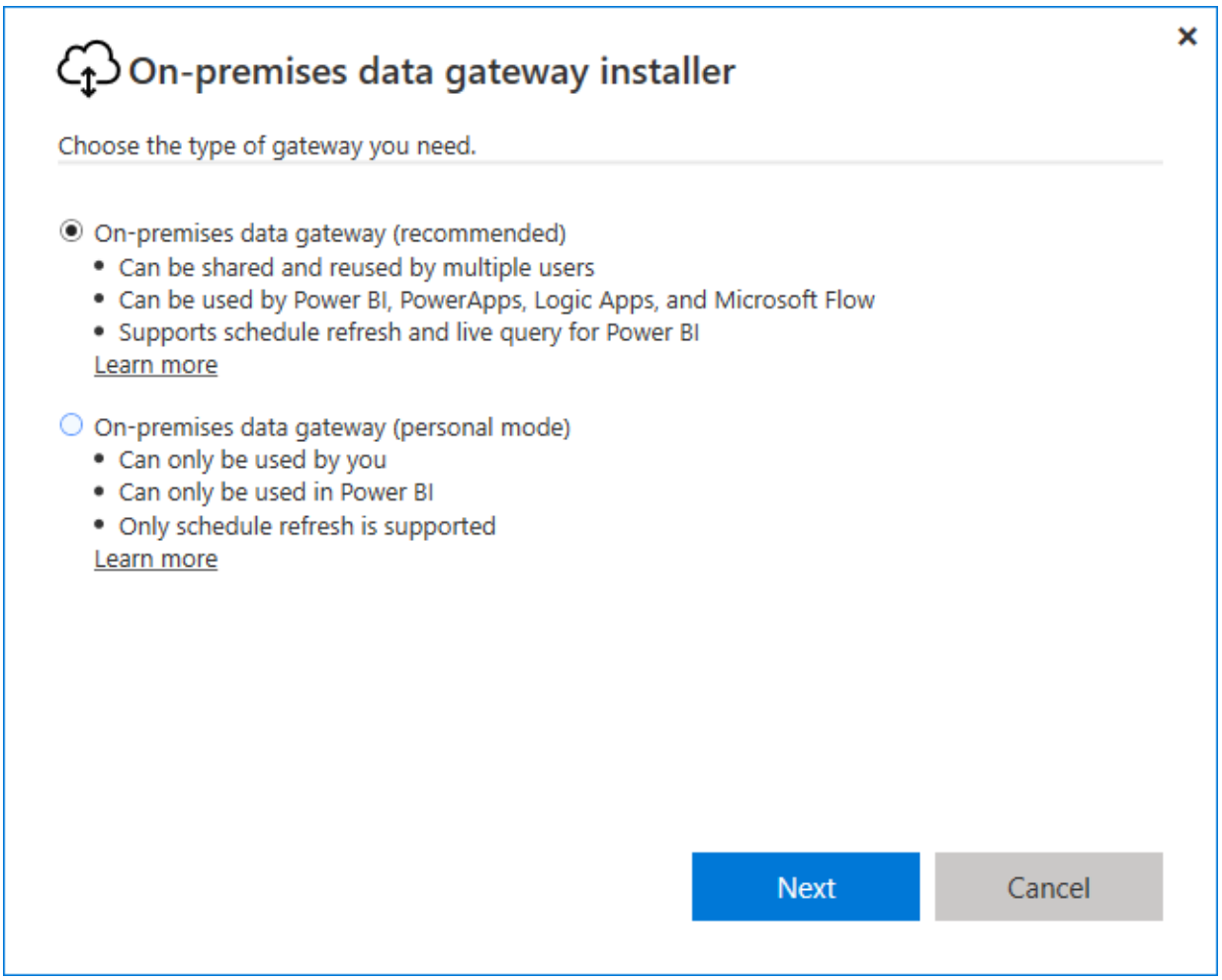
One of the main advantages of using Power BI for your reporting is the automatic update. The ability to have your reports update when the underlying data files are updated. This is often the default (requiring no extra work from you) when your data files are cloud hosted (online databases or OneDrive hosted files). But when you have one or more of your data files on your computer hard-disk or what we call an on-premise data source (source not on a publicly accessible cloud), you will need to install Data Gateway to have that automatic update feature.

Data Gateway is Microsoft's special software tool that makes it possible to sync your private (on-premise) data sources with your published Power BI reports and dashboards that you share. You can download it at https://powerbi.microsoft.com/en-us/gateway/

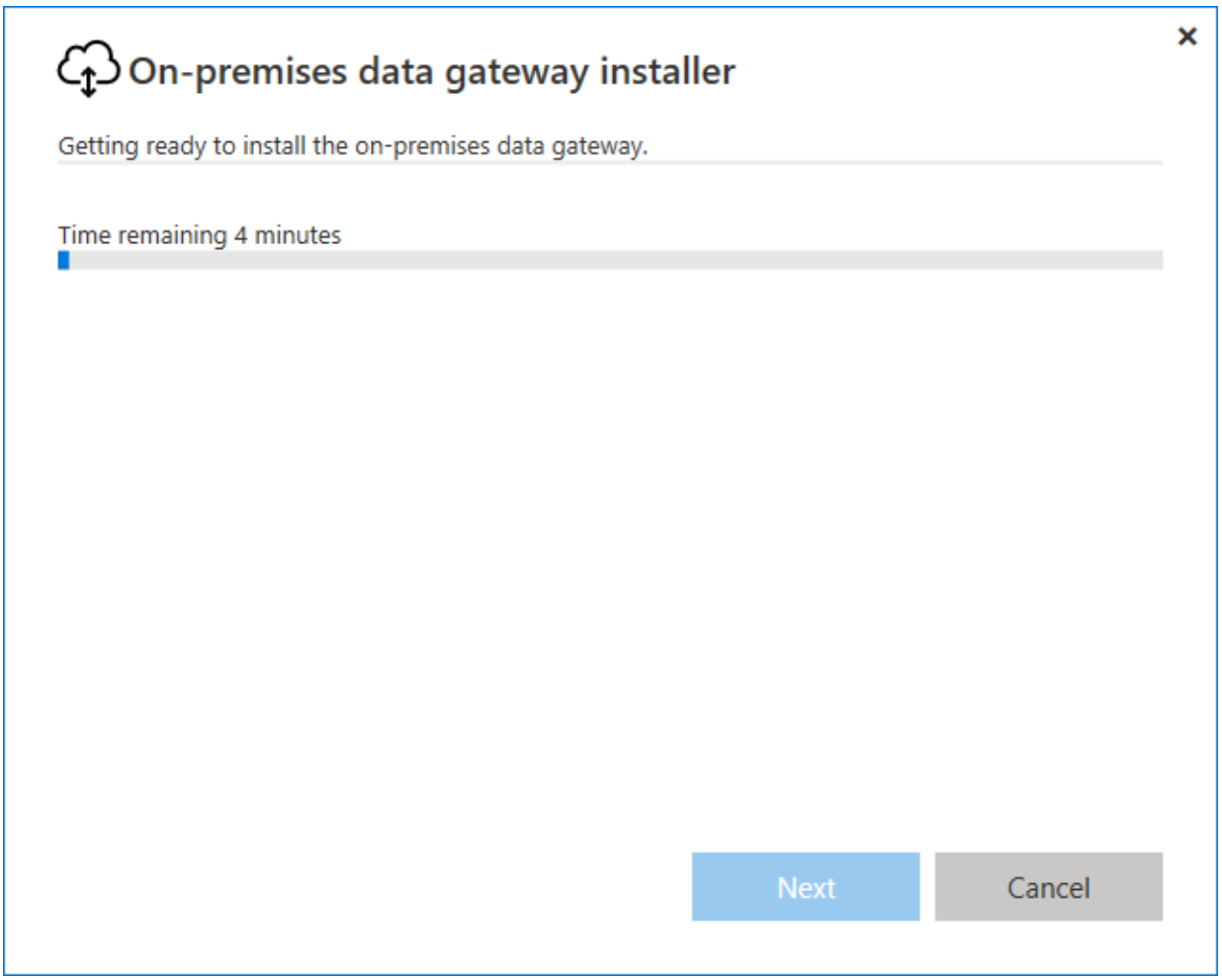

Microsoft
Power BI
Products
Solutions
Partners
Learn
Sign in
Sign up free
Keep your dashboards and reports up-to-date with your on-premises data sources
With the on-premises gateways, you can keep your data fresh by connecting to your on-premises data sources without the need to move the data. Query large datasets and benefit from your existing investments. The gateways provide the flexibility you need to meet individual needs, and the needs of your organization.
DOWNLOAD GATEWAY
LEARN MORE
One gateway for all your cloud services
Install once and deploy multiple on-premises data connections across Power BI, PowerApps, Microsoft Flow and Azure Logic Apps using the
Easy setup
Download and install the gateway with minimal interactions. Then sign in with your organization account to register the gateway to be used by cloud services.
Secured access to data
Data transfer between Power BI and the gateway is secured through Azure Service Bus. Credentials provided by gateway administrators are encrypted to help protect your information
Request demo

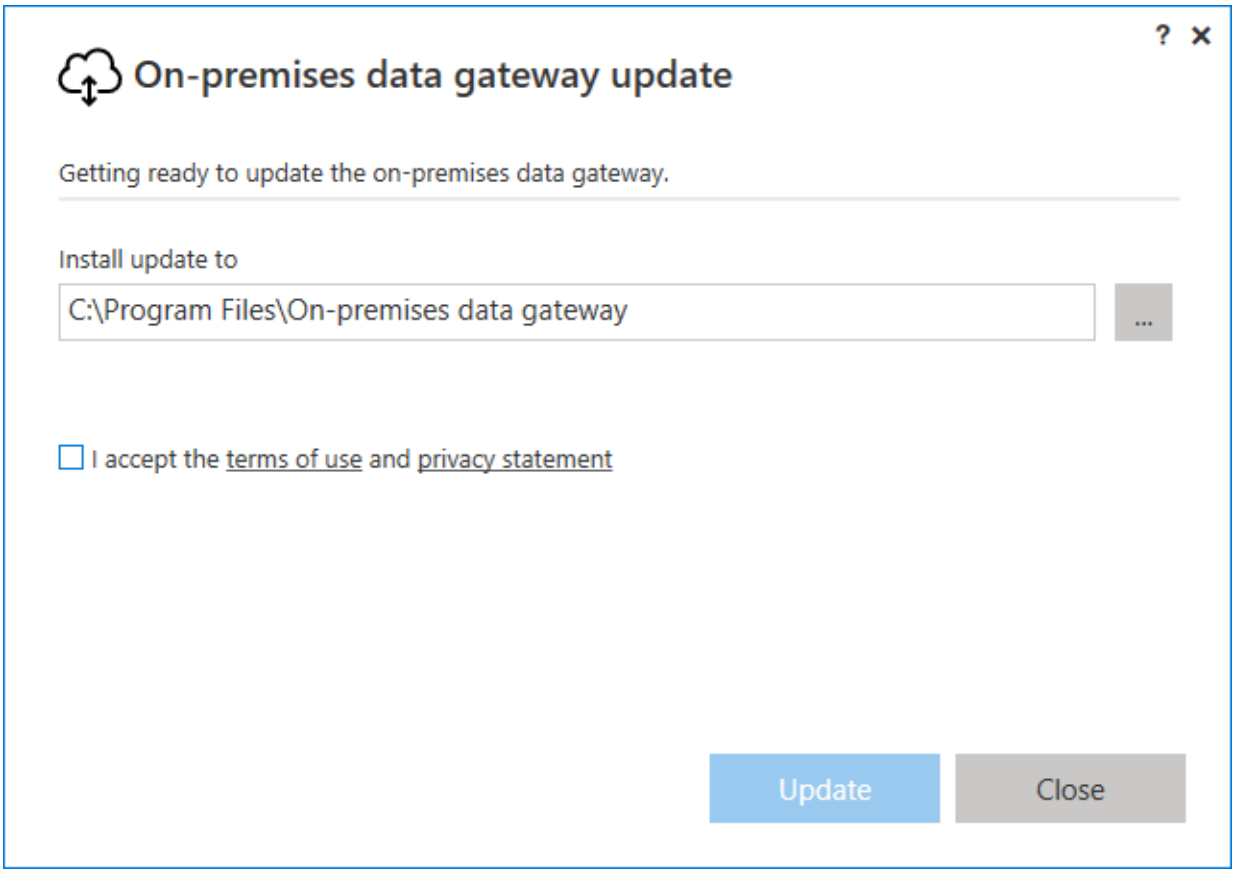
When you run it, you'll see an installer like the one below come up.

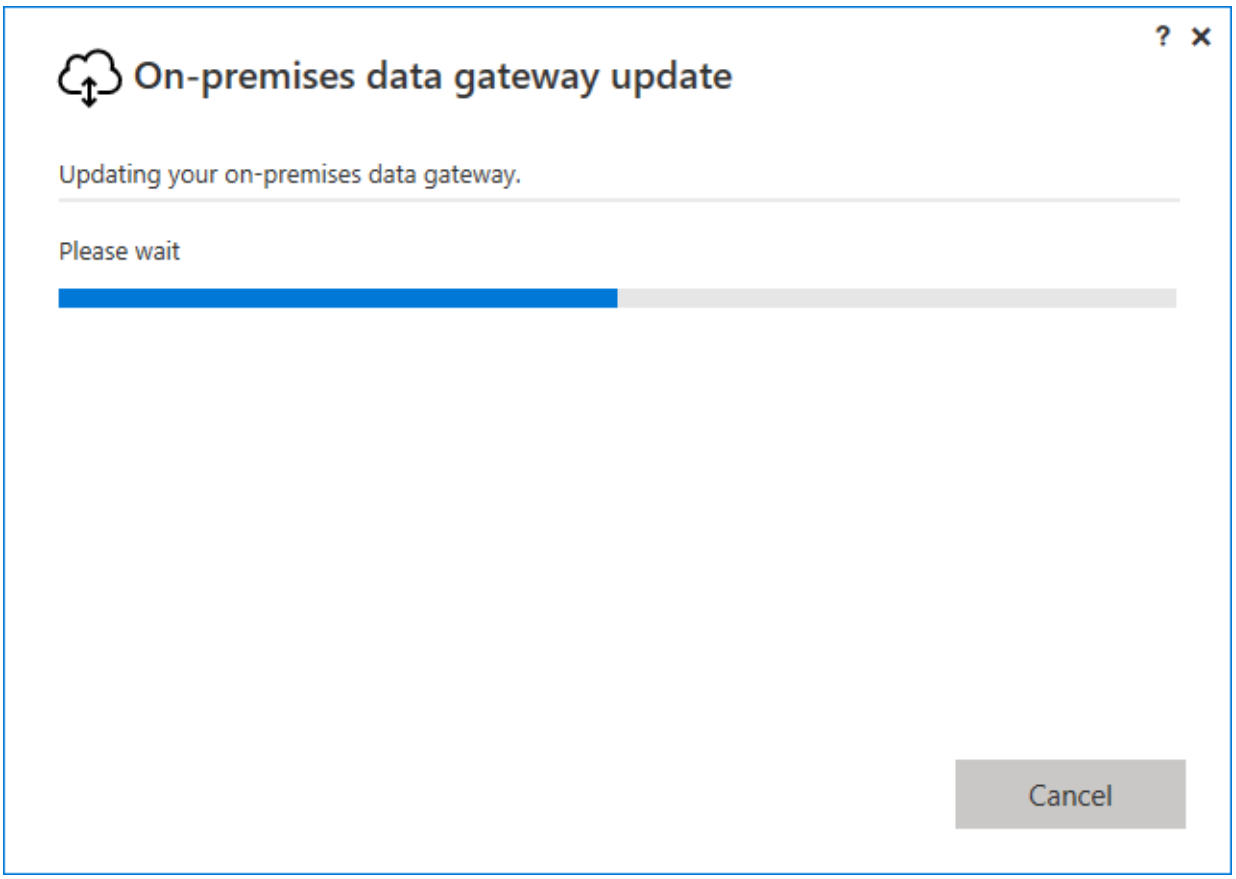

On-premises data gateway installer
Start your on-premises data gateway installation.
A gateway acts as a bridge between on-premises data (not in the cloud), and Power BI, PowerApps, Logic Apps, and Microsoft Flow.
Gateways should be installed on a computer that is always on.
Performance may be slower on a wireless network.
Learn more
Next
Cancel


On-premises data gateway installer
Choose the type of gateway you need.
On-premises data gateway (recommended)
Can be shared and reused by multiple users
Can be used by Power BI, PowerApps, Logic Apps, and Microsoft Flow
Supports schedule refresh and live query for Power BI
Learn more
On-premises data gateway (personal mode)
Can only be used by you
Can only be used in Power BI
Only schedule refresh is supported
Learn more
Next
Cancel

I always go with the first option: On-premises data gateway (recommended).

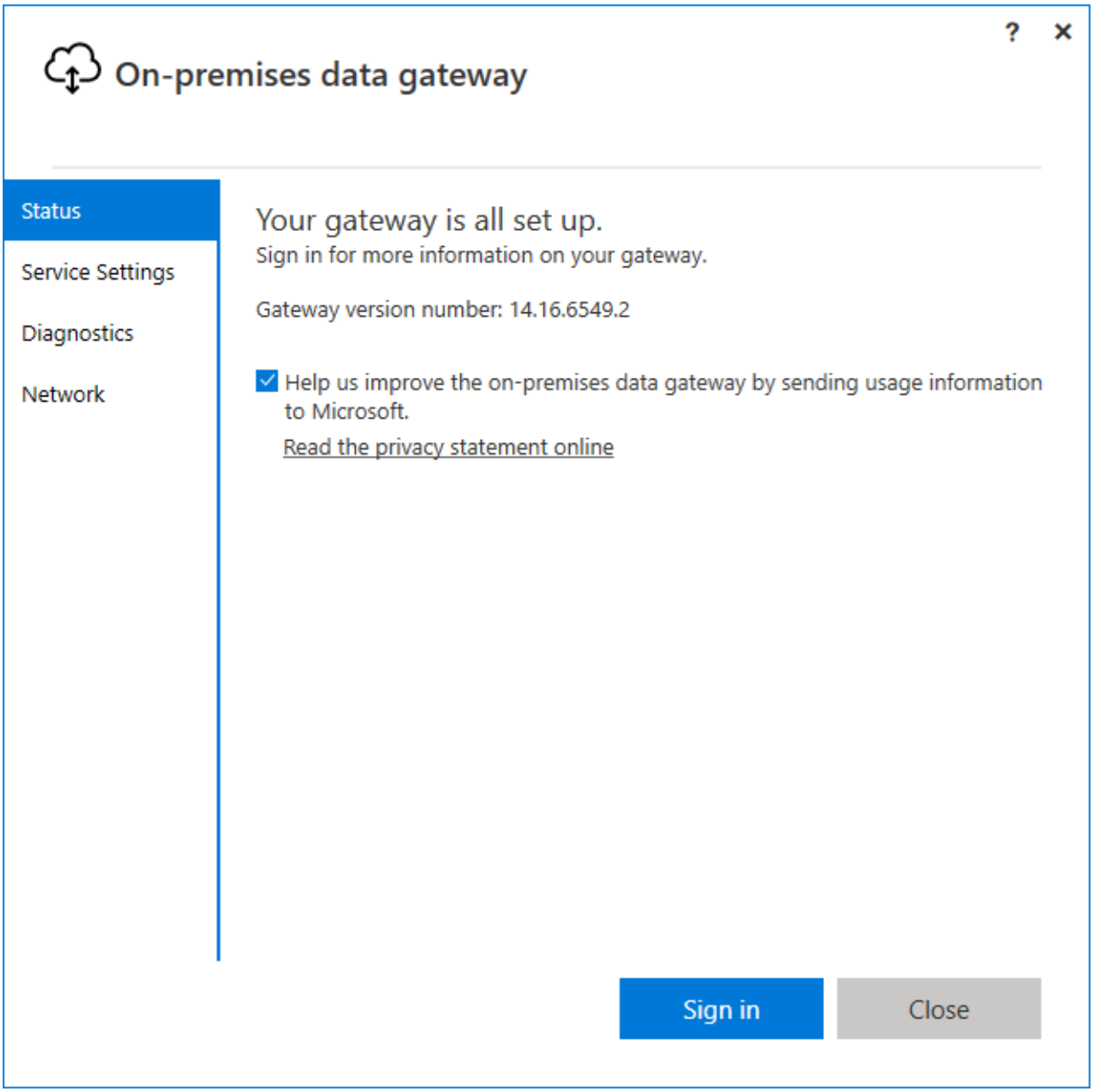

On-premises data gateway installer
Getting ready to install the on-premises data gateway.
Time remaining 4 minutes
Next
Cancel


On-premises data gateway update
Getting ready to update the on-premises data gateway.
Install update to
C:\Program Files\On-premises data gateway
...
I accept the terms of use and privacy statement
Update
Close

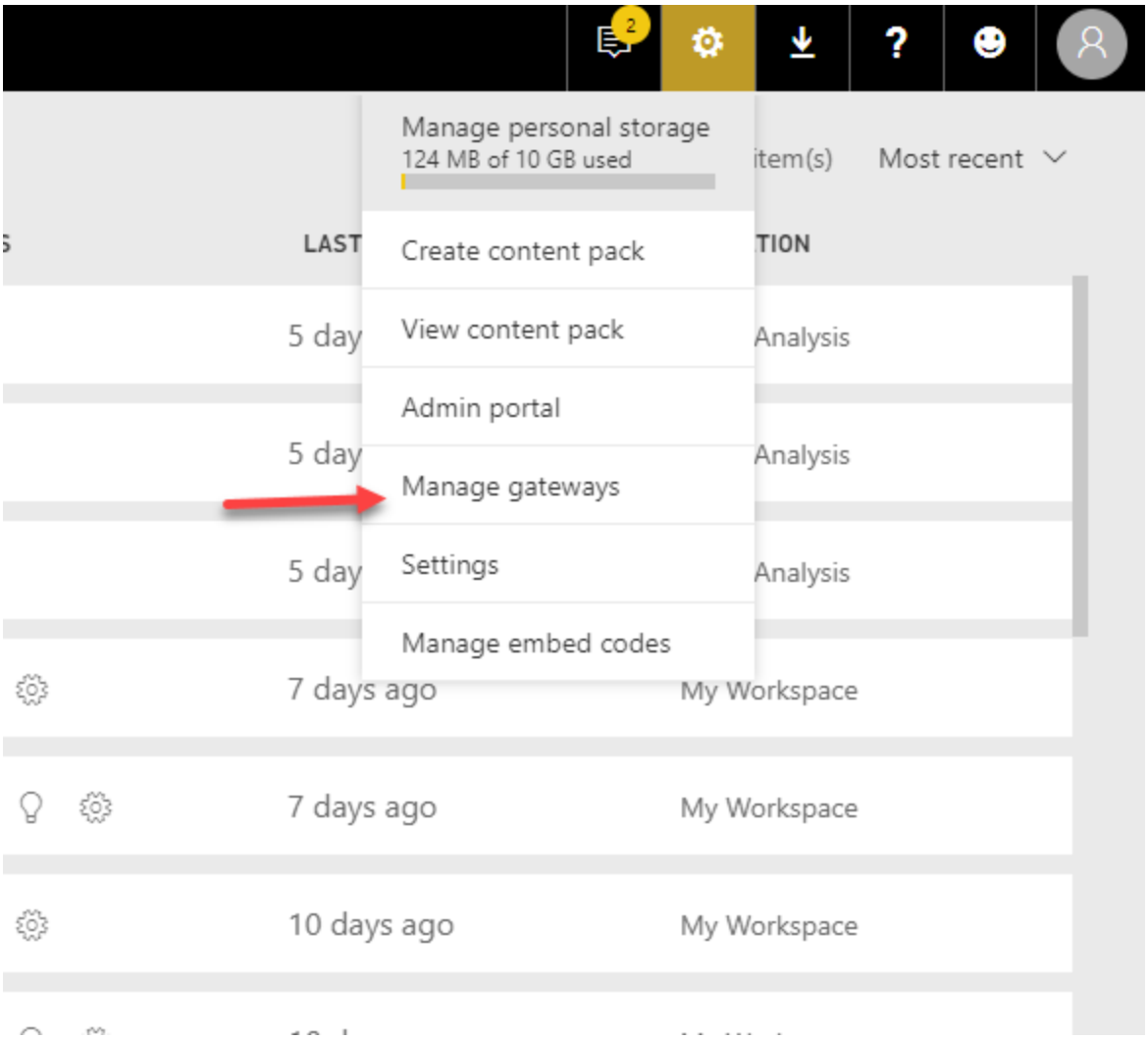


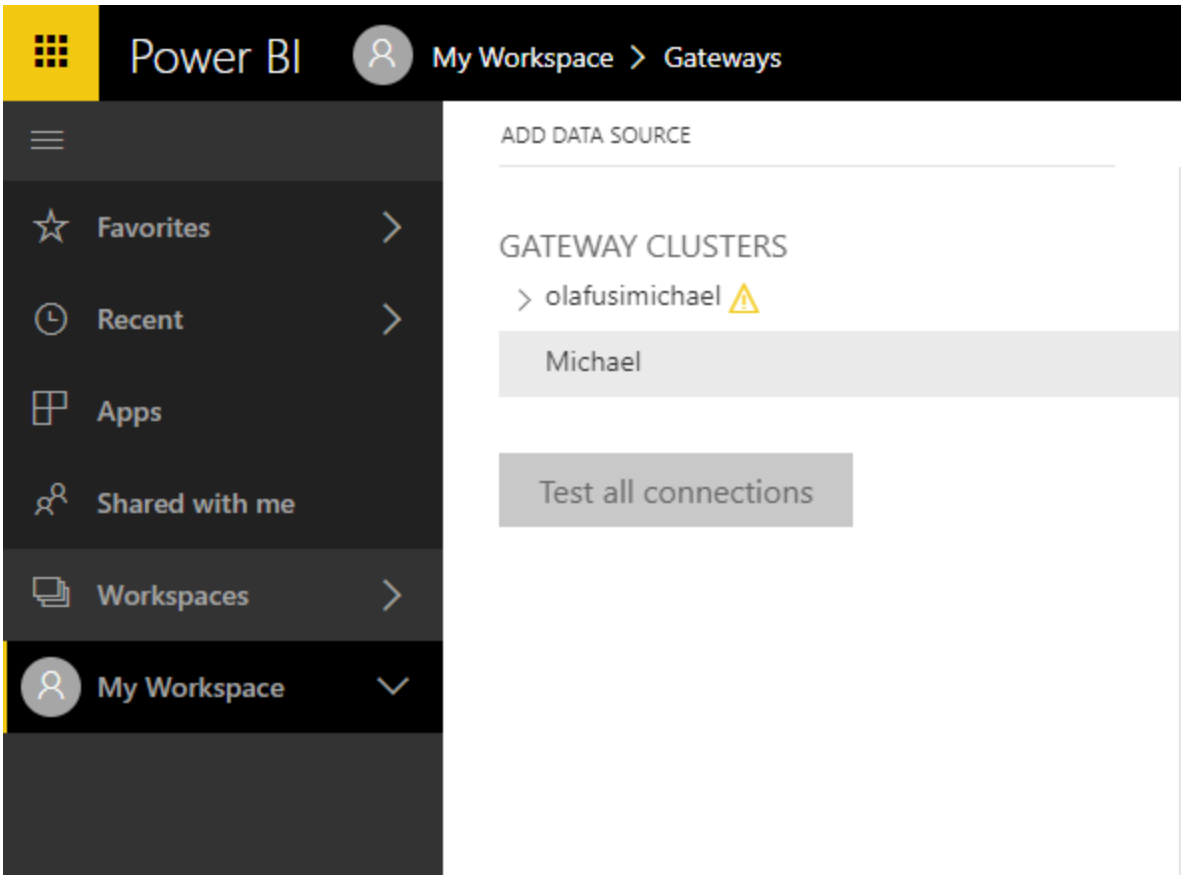
Mine is showing updating because I had installed one before.

On the final screen, you'll have to sign in with your Power BI account details, so it will be able to establish that linking to your published reports.

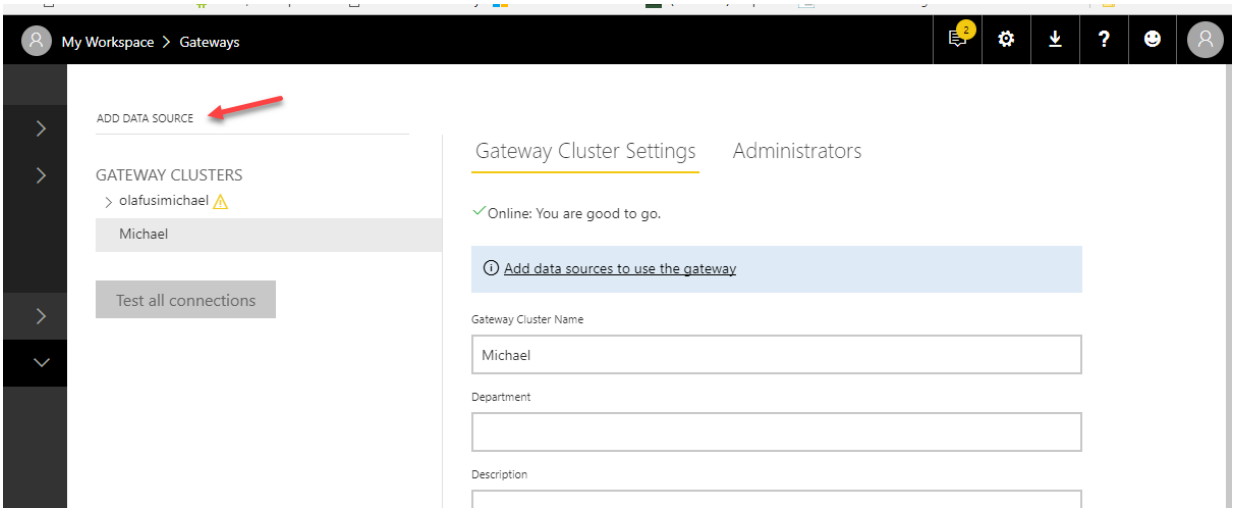


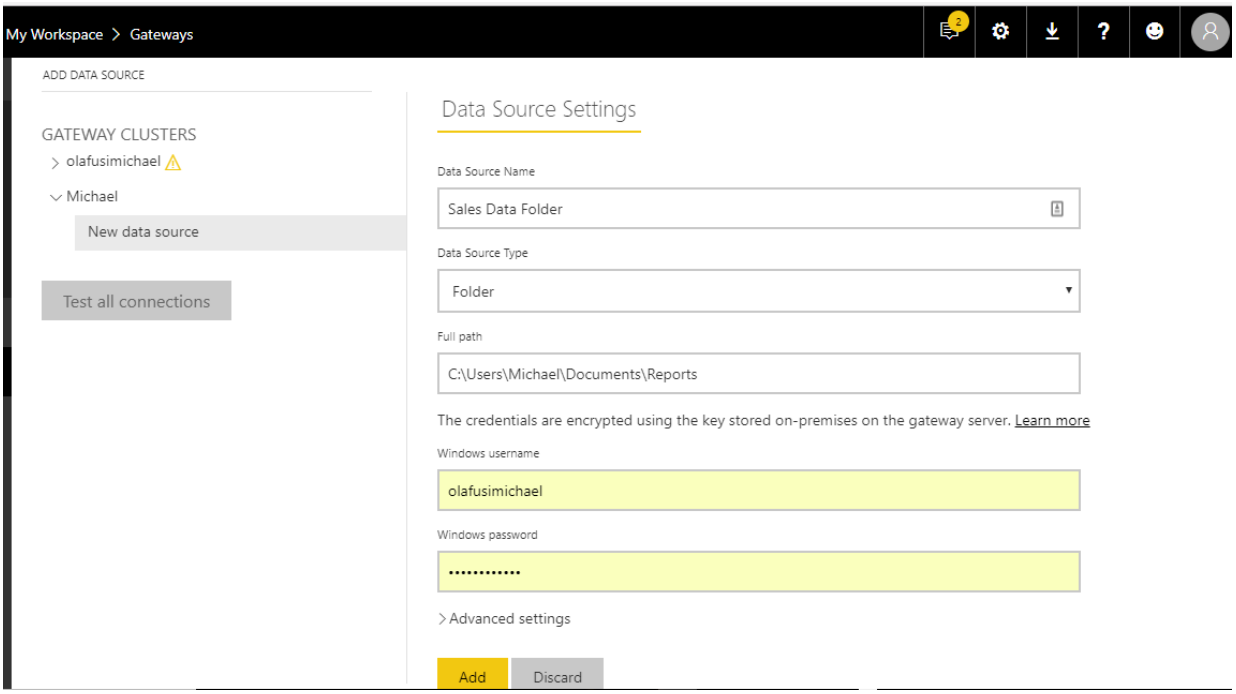
Now that the installation is complete if you go to your online Power BI account, you'll see the gateway you just installed showing under Manage Gateways.


2
Manage personal storage
124 MB of 10 GB used
item(s)
Most recent
LAST
TION
Create content pack
View content pack
Admin portal
Manage gateways
Settings
Manage embed codes
5 day
Analysis
5 day
Analysis
5 day
Analysis
7 days ago
My Workspace
7 days ago
My Workspace
10 days ago
My Workspace



From now on, whenever you publish any report where one or more of the data files/table is stored on your computer, you have to add new data source in the gateway linked to your computer, and indicate the type and location of the file(s).



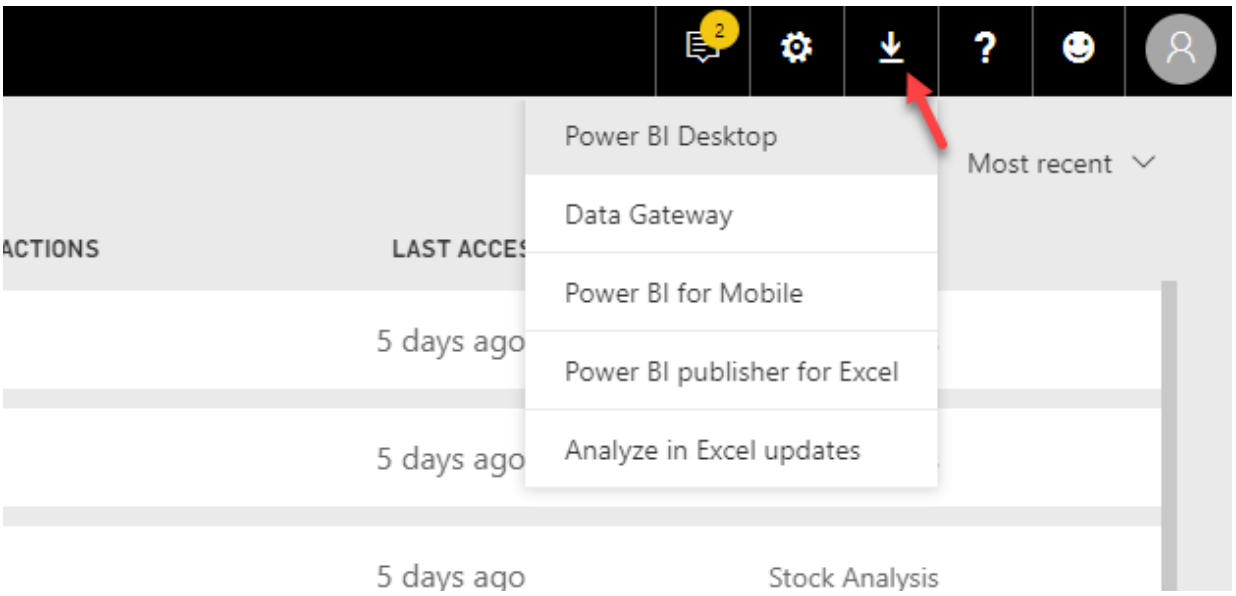


This will make Scheduled Refresh (under earlier discussed Settings) work.

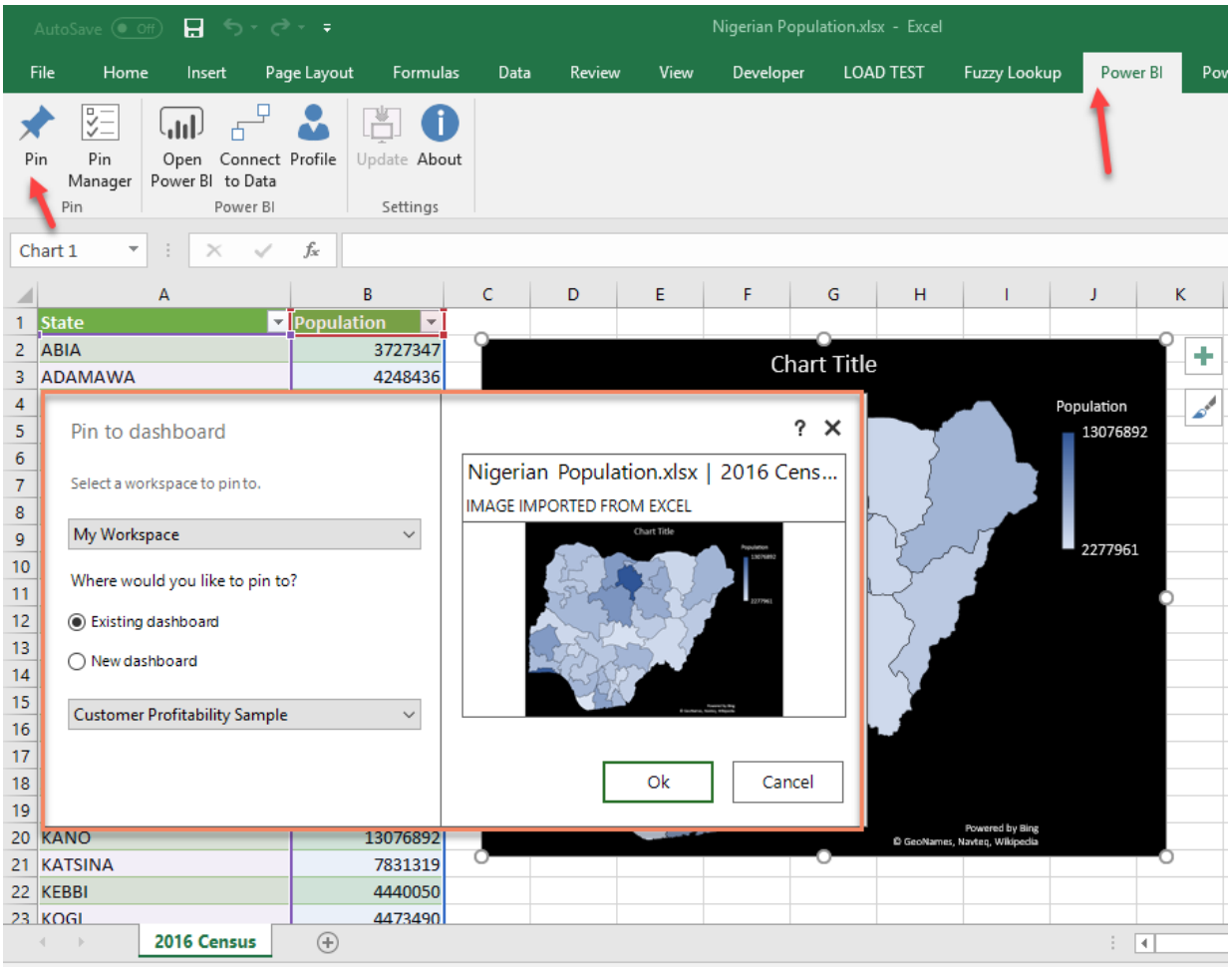
Other Complementary Tools

There are other tools that help you make more use of your Power BI.

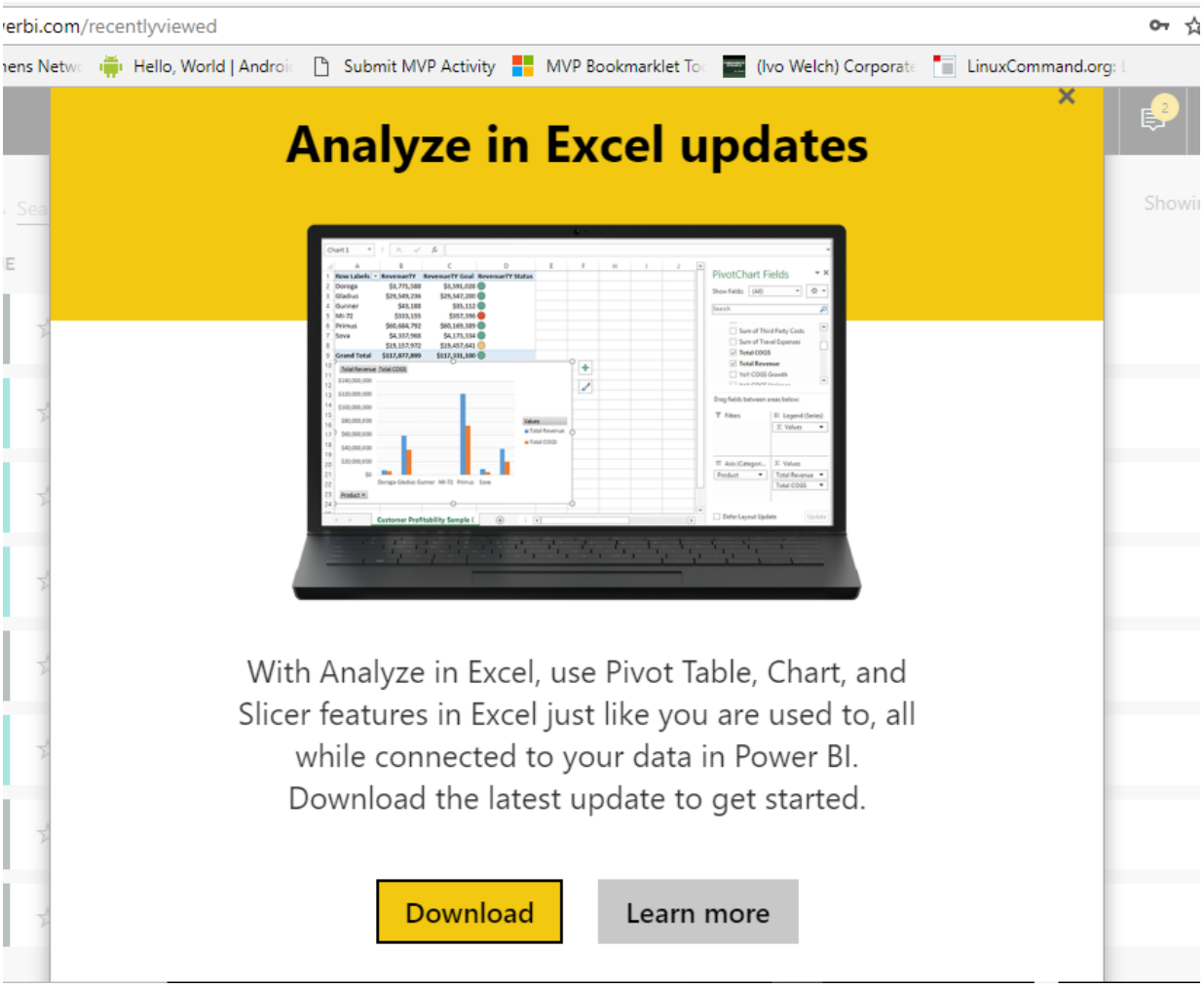
An easy central place to get them is under the download icon in the online Power BI service.



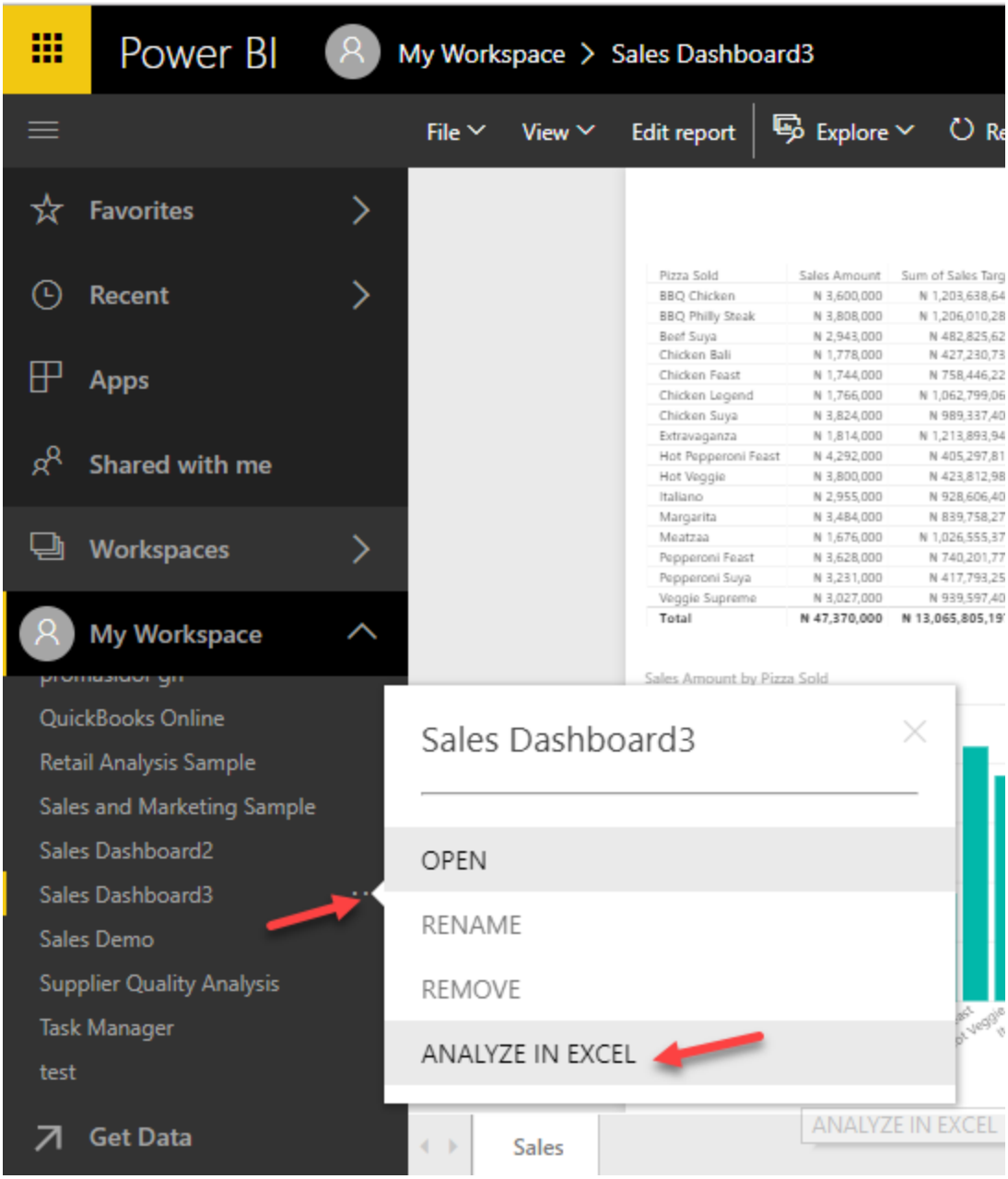
I use the Power BI publisher for Excel. It is an Excel add-in that lets you pin things from your Excel sheet directly to a Power BI dashboard.



The Analyse In Excel updates is another very useful tool to have if you want to be able to pull data from from Power BI into Excel for analysis.


erbi.com/recentlyviewed
Hello, World | Androi
Submit MVP Activity
MVP Bookmarklet To
(Ivo Welch) Corporate
LinuxCommand.org:
Analyze in Excel updates
With Analyze in Excel, use Pivot Table, Chart, and Slicer features in Excel just like you are used to, all while connected to your data in Power BI. Download the latest update to get started.
Download
Learn more

After you install it, you can click on the three dots (ellipsis) in front of the report you want to pull into Excel and select Analyse in Excel. And your Excel will be able to open the ODC file it generates and pull the data for you into a PivotTable.



Also, don't forget to install the Power BI phone apps and Windows 10 store app. They give you some more intuitive ways to consume the reports and dashboards — like having a threshold alert that notifies you on your phone like your SMS alert or Whatsapp message alert does.

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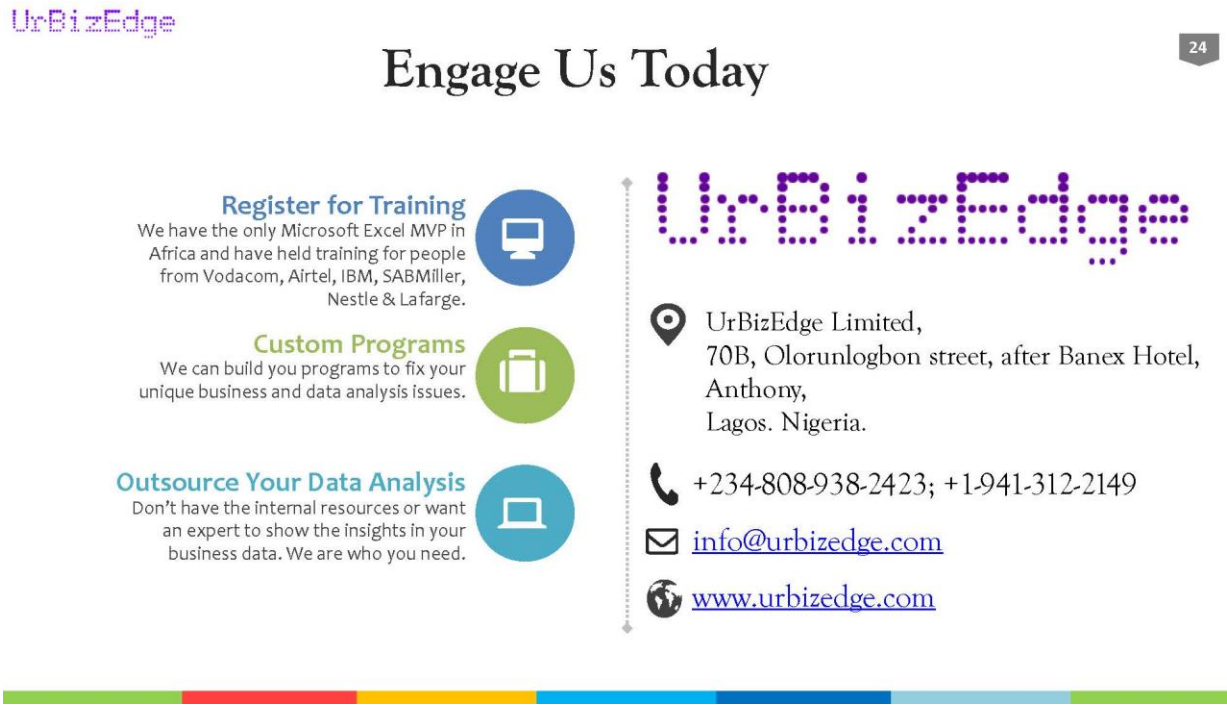
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We have the only Microsoft Excel MVP in Africa and have held training for people from Vodacom, Airtel, IBM, SABMiller, Nestle & Lafarge.
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We can build you programs to fix your unique business and data analysis issues.
Outsource Your Data Analysis
Don't have the internal resources or want an expert to show the insights in your business data. We are who you need.
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